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INSIDE: 8 Type-In Programs

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AUGUST 1987 VOLUME 6, NUMBER 4

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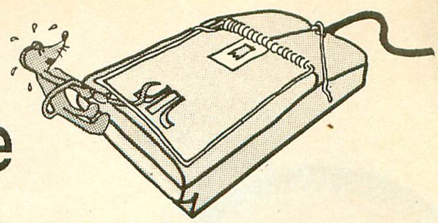
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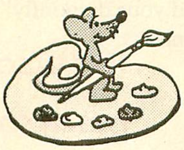
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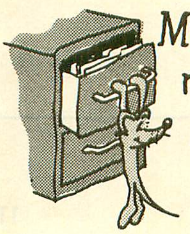




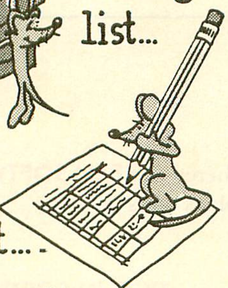
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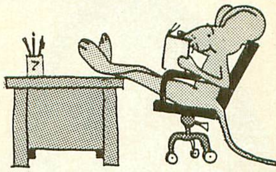


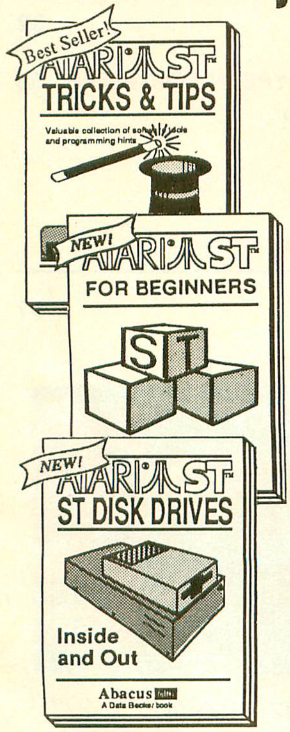
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Antic
The ATARI Resource

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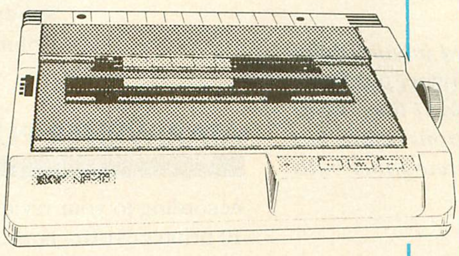
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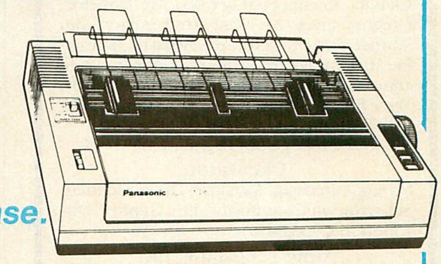
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The **ATARI** Resource

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Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

I/O Board

SPARE SOFTWARE

I'm seeking an ST Bowling League Secretary program to help manage the weekly statistics of a bowling league. I've heard of things for the 8-bit but not for the ST. Any ideas?

Patrick Radaj
Milwaukee

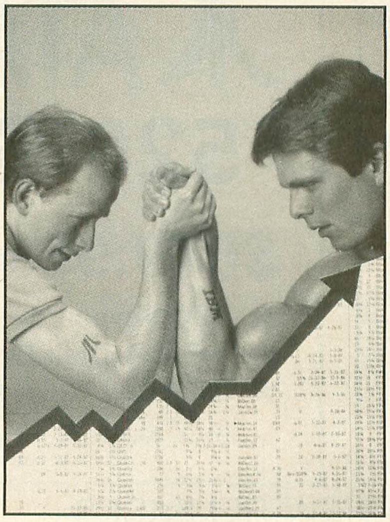
***Antic** would be interested in publishing good Bowling League Secretary programs for both the Atari 8-bit and ST lines. We've invited bowling submissions before, but unfortunately we just threw gutter balls till now.*—ANTIC ED

ATARI HAS HEART

I'm severely disabled, having had surgery on my back, hands and legs at age 55. About five years ago I started saving for an Atari system, and in July, 1985, I bought a 130XE, a 1050 drive, a Teknika monitor and Atari 1020 and 1027 printers.

Last December my 130XE died. I sent a letter to Atari and told them what had happened and that money was hard for me to come by. In March I received a brand new 130XE. The invoice had all zeros and said, "Sorry it took so long. (Signed) Sam T." It was a miracle.

Ralph Sandell
Columbus, Ohio



About The Cover: A resurgent Atari Corp. has muscled its way back into the center of the personal computer marketplace and is competing powerfully against the big guys. One demonstration of Atari's new strength is the 112% rise in its stock price—up from $12.50 to a current $26.50 per share since Atari went public with a $50.6 million stock issue on November 7, 1986. Cover models: Bryan Stewart, courtesy of Gold's Gym, and Tom Chandler, courtesy of Antic..

ATARIWRITER PLUS

According to your review of the Star NL-10 printer (**Antic**, January 1987), the NL-10 is compatible with the Epson FX-10. But when I use AtariWriter Plus, I can't use all the word processing features—such as superscript and elongated print. If I need another printer driver for it, where can I get one?

Also, how can I print the Atari graphic symbols and inverse characters such as those in your program listings?

Paul Kowalski
Brooklyn, NY

The first time you ask AtariWriter Plus to print a document, it asks what kind of printer you're using. First choose "Other," then choose "Epson FX-80" which is what our review specifed, not FX-10. That's what we did, and we didn't have any of the problems you described. As for printing out those symbols, try Lister Plus ($19.95, The Catalog, APO179).—ANTIC ED

8-BIT ABROAD

My article about visiting **Antic** last fall has been printed in the West Germany "Atari Magazin" (March/April 1987). In Europe, the 8-bit Atari is far from dead. Many new programs have arrived on the software market here, such as Spindizzy, a Marble Madness type of game; Tomahawk, a 3-D helicopter simulation; Trivial Pursuit; and Airline, a multi-player strategy game featuring window graphics.

Frank Emmert
Furth, West Germany

continued on page 8

Rebound Contest Winners

New Flip Ogart adventures on disk

BY NAT FRIEDLAND, ANTIC EDITOR

When our package arrived from Eugene, Oregon with J.D. Casten's 10 picks for Rebound Game Screen Design Contest winners, we discovered that First—and Third—Place both went to Gwen Lenker. The **Antic** editors were intrigued to find that this double-winner named her grand-prize screen Zouth Park and gave her address as c/o 1 South Park, San Francisco.

As it happens, **Antic's** new building is on the corner of Second Street and South Park, and the windows of the editorial department look out on the 1 South Park office building.

So, feeling like a disk jockey phoning the winner of a "dialing-for-dollars" giveaway, I called Ms. Lenker at her company and arranged for her to come next door and be photographed with her software prizes from The Catalog. (She sounded just about as excited as those winners of radio giveaways.) Our First-Place winner is a quality controller at Western Microfilm and has been programming her Atari 800XL for 1 1/2 years.


Mary Rhomberg Peloquin

This contest was based on J.D. Casten's *Rebound*, **Antic's** January 1987 Game of the Month, and the February 1987 follow-up, *Rebound Construction Kit*. Casten, whose 80-column *Easy 80* display program appeared here last month, judged the winners himself. (Casten's latest maze-ladder game, *Maximillian B.*, will be next month's Xtended Disk Bonus. It's perhaps his most challenging game yet, but the listing is too long and fiendishly complex to be published as a type-in.)

MORE WINNERS

Second Place went to Carl Archer of Point Pleasant, New Jersey. The rest of the Top 10 screens came from:

Ellis Phillips, Livermore, CA; Mark Anderson, Buffalo Grove, IL; Leonard DeJesus, another San Franciscan; H.J. McGinty, Key Largo, FL; David Todd, Florida State University; Kevin O'Neil, Westminster, CO; Tim Simpson, Tecumseh, MI.

All the screens we have room for will go on this month's Antic Disk. Each contest winner gets a copy of the monthly disk and the J.D. Casten Game Disk from The Catalog.

I/O Board

continued from page 6

MICROMOD TURBOBASE

I own many Atari 8-bit business application programs, but I have been looking for the one that could "do it all" for a small business. I believe I have found such a system in Micromod Turbobase.

I had bought Micromod 3.0 in September, 1986, and while I was impressed with it, I noticed a couple of bugs and was disappointed with the manual, which assumed too much knowledge on the part of the reader.

I contacted Micromod boss Steve Bolduc, who was gracious, receptive and supportive. Micromod 3.0 was removed from the market. And in February 1987, I received a copy of Micromod Turbobase Quick Course and Cookbook, as well as a demo of Turbobase. Mr. Bolduc had listened very well indeed. QCC does everything it claims and then some, and the new manual is outstanding.

J.J. Moniz
Huntsville, AL

Antic currently has a review of Micromod Turbobase in the works. We hope to print it in the next issue.—ANTIC ED

V-GRAPHICS

After I had typed in and run *V-Graph* (**Antic**, November 1986), the PRINT command threw my poor Prowriter 8510 into some sort of fit. The accompanying article suggested substituting my own graphics dump in lines 670-710. This is beyond my modest programming talents.

I finally came up with a crude solution: I put a screen save routine in place of the printer routine, and I printed out the saved screen with a long, involved screen dump in machine-language. It's messy, but it works. However, I'd much rather someone took pity on me and sent a nice, simple routine I can actually put in the program.

While you're at it, you wouldn't happen to know of a nice gentleman (fortyish) who would like a hopeless computer addict equipped with three sons, would you?

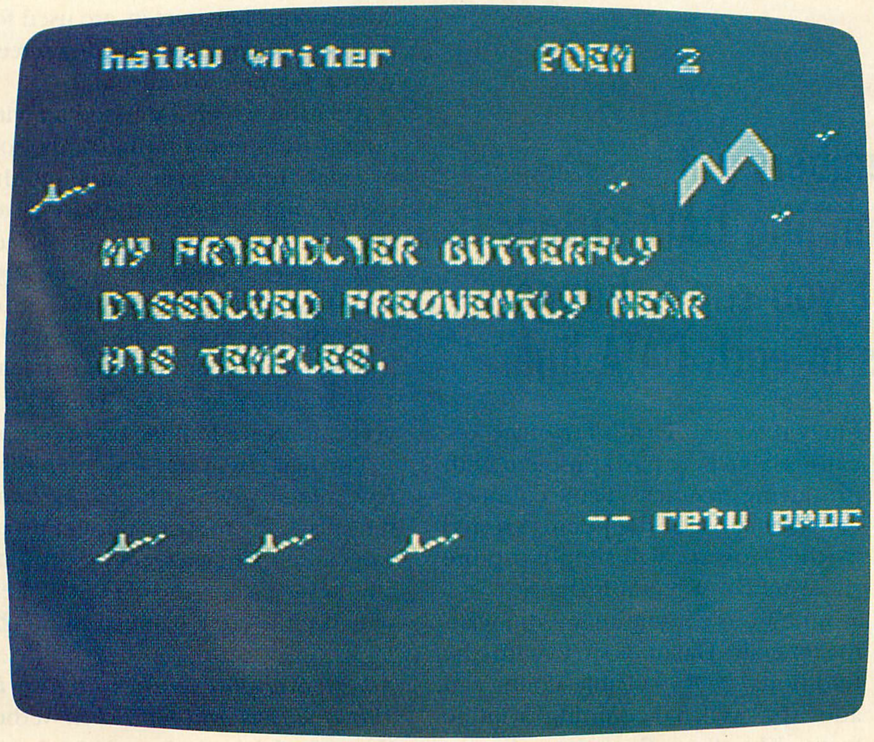
continued on page 11

Haiku Poet

"The swiftly computing Atari dreams nameless beyond your dragonfly."

BY ALBERT BAGGETTA

Haiku Poet makes your Atari start rhapsodizing about the wonders of nature like a single white rose glimmering under a misty rainbow. You even get simulated bamboo flute music in the background and a pseudo-oriental character set. This BASIC program works on 8-bit Atari computers with a minimum of 48K memory and disk drive.



Having long been fascinated by the Japanese mystique as interpreted by Western pop art, I decided to try my hand at a program that generates haiku poems, those magnificent short word-sketches that philosophize in a very spiritual way about nature, animals and the meaning of life.

Japanese haiku poems "paint" realistic images that can be symbols for other things. Snow might represent death, for example—or purity. The Sun, because it rises in the morning, might suggest life's eternal renewal.

GETTING STARTED

Haiku Poet has two listings that will let your Atari take its rightful place in the centuries-old tradition of Japanese haiku masters. Listing 1 is the main program and Listing 2 creates the special Japanese-style character set.

Type in Listing 1, HAIKU.BAS, check it with TYPO II and SAVE a disk copy. Next, type NEW and type in Listing 2, MAKER.BAS, check it with TYPO II and SAVE a disk copy before you RUN it.

When RUN, Listing 2 creates the Japanese-style character set and writes it to a disk file called JAPAN.FNT—which will automatically be loaded each time Listing 1 is RUN.

HAIKU.BAS and JAPAN.FNT are on the back of the monthly disk, so they

continued on next page

do not need MAKER.BAS.

You can also use JAPAN.FNT with most programs that will use redefined character set files (such as HomeTerm or Lister Plus). You may also examine and edit JAPAN.FNT with any character set editor.

AI POETRY

As a program, Haiku Poet is primarily an experiment in emulating Artificial Intelligence (AI) on the 8-bit Atari. This program creates new patterns from an assortment of data, using fundamental rules of language. This is not easy in slow-paced BASIC, but careful programming creates the interesting illusion of computer-as-poet.

I gave the 8-bit Atari the raw materials for language communication. It knows where to find parts of speech such as articles, nouns, verbs, adjectives, pronouns, adverbs and prepositions—but it doesn't know what they are. A little help was needed here, so I set up potential patterns for the computer to choose from. Through random choices it selects not only the final order of the poem but the contents as well.

Two programming devices were used to add variety to the computer's output—RND (BASIC's random command) and a type of bank switching. Because of RND the program can choose randomly between different formats for a poem's structure. Sometimes it starts with an article, sometimes with a noun, sometimes it modifies these words with adjectives or constructs phrases that will modify. This creates a free form of verse, reminiscent of the works of great haiku poets such as Basho, Issa and Shiki.

Along with the RND function, I use a random-access searching technique to skip over inappropriate words in the DATA statements. The words in the DATA statements are arranged into grammatic categories such as personal pronouns, verbs and adjectives.

Each category begins at a "key" line number. The prepositions, for example, begin at line 1850. To find a preposition, the program simply bypasses all the other categories and begins its search at line 1850.

To further increase the degree of randomness, the program will often begin its search one line *after* the key line number. The program bases its choice on a random value stored in a variable named BANK. In the previous example, the program would begin its search at line 1850 when BANK=1, and at line 1860 when BANK=2.

COMPUTER HAIKU

Haiku poetry at its purest is a three-line form, where each line must have a specific number of syllables. Line one must have five syllables, line two must have seven and line three must have five again. English haiku translations usually try to stick close to this "official" format, but it is not absolutely required. That is fortunate, because Haiku Poet has a problem with producing an exact syllable count every time. Most of the poems created by this program will simply capture the essence of haiku imagery.

Ambitious programmers who want to generate Haiku poetry with the traditional 5-7-5 syllable count can add the syllable-counting routine from *The San Francisco Fogger* (**Antic**, February 1987). This routine begins at line 510 in the FOGGER.BAS listing.

Haiku Poet is not totally foolproof, which can regularly lead to amusing results. Some of its images will not be realistic, and others are downright foolish. But once in a while a real glimmer of truth and perception is displayed by the program. This still does not violate the original concept of the haiku too much. Some of the greatest haiku writers had a comic streak—they would sometimes juxtapose two unrelated objects to create a humorous effect.

(*To our deepest shame, we must admit that certain irreverent members of the* ***Antic*** *staff got lots of cheap laughs out of changing the words in the DATA strings after the key lines—so that silly images were guaranteed. If you are the kind of low-life who enjoys doing this sort of thing, just remember that you cannot change the total number of words in each DATA line.*—ANTIC ED)

Irreverent Antic staff members got some cheap laughs by changing DATA strings, ensuring silly images—but you can't change the total number of words in each DATA line.

SOUND AND GRAPHICS

I added some graphic and sound features to give the program a more life-like quality. As Haiku Poet is loading, it redesigns the standard Atari character set to look like oriental script. Some control characters are used for decorating a Japanese-looking screen with a sky-blue background.

After the screen is dressed up with bonsai trees and soaring birds, soft oriental "flute" music drifts into the background, adding to the tranquil effect of the haiku text being displayed.

If you see a verse that seems worthy of saving in print, just switch on your printer and hold down the [START] key. If your printer can load an oriental character set, you'll get a very impressive-looking set of poems.

The haiku will stay onscreen for a few minutes while the background tune plays. But to speed things up, you can call up a new poem by pressing any key—except the [SELECT] key, which ends your haiku session.

Albert Baggetta teaches English in Massachusets and published Verbot Commander *in the June 1987* ***Antic.***

Listing on page 60

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(I even love football—what more could a man want?)

Rebecca Pyle
Urbana, Ohio

Antic currently knows no one fitting that description. However, we will forward any mail to you.—ANTIC ED

Help!

FAIR DATE FIXES

Apparently the Atari Fair Update list supplied to **Antic** (June 1987, page 19) was somewhat buggy. Two corrected fair dates/sites are:

- Detroit, August 28-30, Southfield Hilton.
- Boston, October 10-11, Worcester Centrum.

COLDSTART TIP

The "Coldstart in BASIC" June 1987 Tech Tip should have been:

X=USR(58487)

CITADEL

If *Citadel* (June 1987) is producing an ERROR 141 AT 440, the fix is below. Many thanks to **Antic** Contributing Editor Dave Plotkin for helping us isolate and fix this problem.

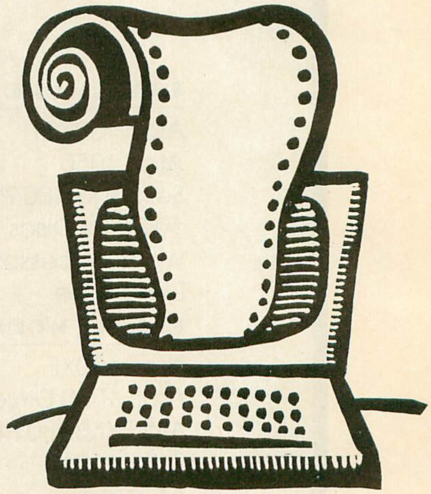
```
RR 430 POSITION 10,9:? "1M╪╪╪no╪╪●":GOSUB
    220:POKE 559,34
RG 440 FOR X=35 TO 0 STEP -1:SOUND 1,10,4
   ,8:POSITION X,1:? "hga":FOR D=1 TO 15:
   NEXT D:NEXT X
FI 445 FOR I=2 TO 37:BFLAG(I)=1:NEXT I
```

Antic *welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.*

Send letters to: Antic I/O Board, 544 Second Street, San Francisco, CA 94107.

Antic dataBASE

Super Disk Bonus File-Manager



This month's Xtended Disk Bonus is Antic dataBASE, an easy-to-use file manager with all operations controlled by your menu selections. Antic dataBASE makes it simple to create your own mailing lists, phone directories, household inventories, catalogs of your music, videotapes, software, books or magazines—any kind of interactive data file.

Antic dataBASE requires an Atari 8-bit computer with at least 48K and a disk drive. Written by **Antic** Contributing Editor Carl Evans, this is the same handy file manager that used to be given away with Indus GT disk drives.

Antic dataBASE saves your updated information on disk and presents it back to you either on your computer screen or in hardcopy from your printer. You can keep a mailing list on disk and quickly access any individual's address or phone number. You can even have your Atari select all names and addresses with a specific ZIP code or telephone area code.

GETTING STARTED

The Antic dataBASE program, ANTICDB.EXE, is on Side B of the August 1987 Antic Monthly Disk. Before you use Antic dataBASE, the ANTICDB.EXE file should be copied to a fresh disk that has been formatted with DOS 2 or 2.5. (Be sure to WRITE DOS FILES to this disk.)

Put your Antic dataBASE disk into your drive and rename ANTICDB.EXE as AUTORUN.SYS. To start the program, turn off your Atari and place your ANTIC dataBASE disk into drive 1. Remove all cartridges. (If you have an XL or an XE, hold down the [OPTION] key.) Turn on your Atari and Antic dataBASE will start automatically. When you see the title screen, press any key to get the main menu.

The Antic dataBASE Manual is also on Side B of the August 1987 monthly disk. To read it or obtain a printout, select choice 5, HELP.BAS, from the Side B Menu.

For same-day shipment of the August Antic Disk featuring Antic dataBASE, phone (415) 957-0886 and ask for the Disk Desk. Only $5.95 on your Visa or Mastercard.

Tapeless Spreadsheet Printer

Sideways printouts made easy

BY ROBERT GRUNBOK

I use my Atari 130XE and Broderbund's SynCalc Spreadsheet for both home and business budgets. I had to convince a board of directors that the Atari could do the job of the "big business" computers, but now that I've crossed that bridge, each board member seems to need his or her own copy of the budget.

Connecting spreadsheet printouts with transparent tape soon became boring, especially after hearing "Let's change this figure to that amount" a few times. Tapeless, my sideways spreadsheet printer for the 8-bit Atari, was born out of the tedium of taping page after page of spreadsheets. This published version works with SynCalc, VisiCalc and SpeedCalc spreadsheets.

Tapeless supports four major printer families—the Epson FX-80, Gemini 10X, Star SG-10 and Okidata 92. One of these drivers should work for most printers on the market today.

A commercial program that prints IBM spreadheets sideways in a continuous strip is a big seller. Now you can type in an 8-bit Atari program that does the same thing for SynCalc, VisiCalc and SpeedCalc spreadsheets. Tapeless Spreadheet Printer is a BASIC program that works on 8-bit Atari computers with a minimum of 48K memory and a disk drive.

TYPING IT IN

To minimize typing and enable you to use maximum-size strings, your version of Tapeless will be constructed from several smaller files. This isn't as complex as it sounds. Just check the listings that apply to your printer and follow the instructions below.

Follow the instructions closely, and don't renumber the listings: some lines deliberately overlay others during "construction" for your printer.

Don't renumber the listings: I deliberately have some lines overlaying others during "construction" for your printer.

Follow these steps using TYPO II to check your work, and SAVE or LIST to disk as instructed:

1. Type in Listing 1, TAPELESS.BAS, and SAVE it to disk.

2. Type in Listing 2, MAKEAUTO.BAS, and SAVE it to disk. This creates an AUTORUN.SYS file needed to RUN other files.

3. Type in Listing 3, TITLE.BAS and SAVE it to disk.

4. Choose the file containing character set data for your printer—either TOPDOT1.LST for Okidata/Gemini 10X printers, or BOTMDOT1.LST for Epson FX-80/Star SG-10 printers. Type it in and LIST it to disk.

5. Choose the character loader file for your printer. (For

example, if you own an Okidata printer you would choose OKILOAD.LST.) Type it in and LIST it to disk.

6. Type NEW.

7. To construct your actual printer character loader, type LOAD "D:TITLE.BAS", then ENTER the files from your disk in this order:

• One character set data file (TOPDOT1.LST or BOTMDOT1.LST)

• One character loader file (FX80LOAD.LST, G10XLOAD.LST, SG10LOAD.LST or OKILOAD.LST)

For example, if you own an Okidata 92 printer, type LOAD "D:TITLE.BAS". Then ENTER "D:TOPDOT1.LST" and then ENTER "D:OKILOAD.LST".

8. SAVE this constructed program as PRNTLOAD.BAS.

9. RUN MAKEAUTO.BAS. This creates an AUTORUN.SYS file for PRNTLOAD.BAS.

10. You have now constructed the three major files composing the Tapeless program—AUTORUN.SYS, PRNTLOAD.BAS and TAPELESS.BAS. Transfer them to a freshly formatted disk (containing DOS 2.0 or 2.5) and retain the other files on your "construction disk" both for backup and for making different versions of Tapeless for different printers.

11. Don't be tempted to combine PRNTLOAD.BAS and TAPELESS.BAS into one file. Chaining these programs allows the simulated string array, "P$" in TAPELESS.BAS, to be as large as possible.

If your form has more than 80 horizontal rows, you'll have to tape a horizontal joint to print it out.

PRINTING

If your form has more than 80 horizontal rows, you'll have to tape a horizontal joint. However, most spreadsheet memory restrictions don't allow a very tall *and* wide form.

To speed up the program, the screen is blank most of the time while Tapeless RUNs. However, you'll still hear the beeps of the disk being read to let you know that Tapeless is working. If you have BASIC XL or BASIC XE ($79, OSS), the program will run even faster. Just don't forget to copy the BASIC XE Extensions file to your Tapeless disk.)

If your form is exceptionally large or your Atari's memory is less than 48K, Tapeless will do multiple loads and prints until the entire form is finished. So always be sure to load your printer with plenty of paper.

IMPORTANT: If the program instructs you to check a DIP switch, make sure you've turned *off* the printer power before setting switches. Otherwise, you could blow an integrated circuit in your printer.

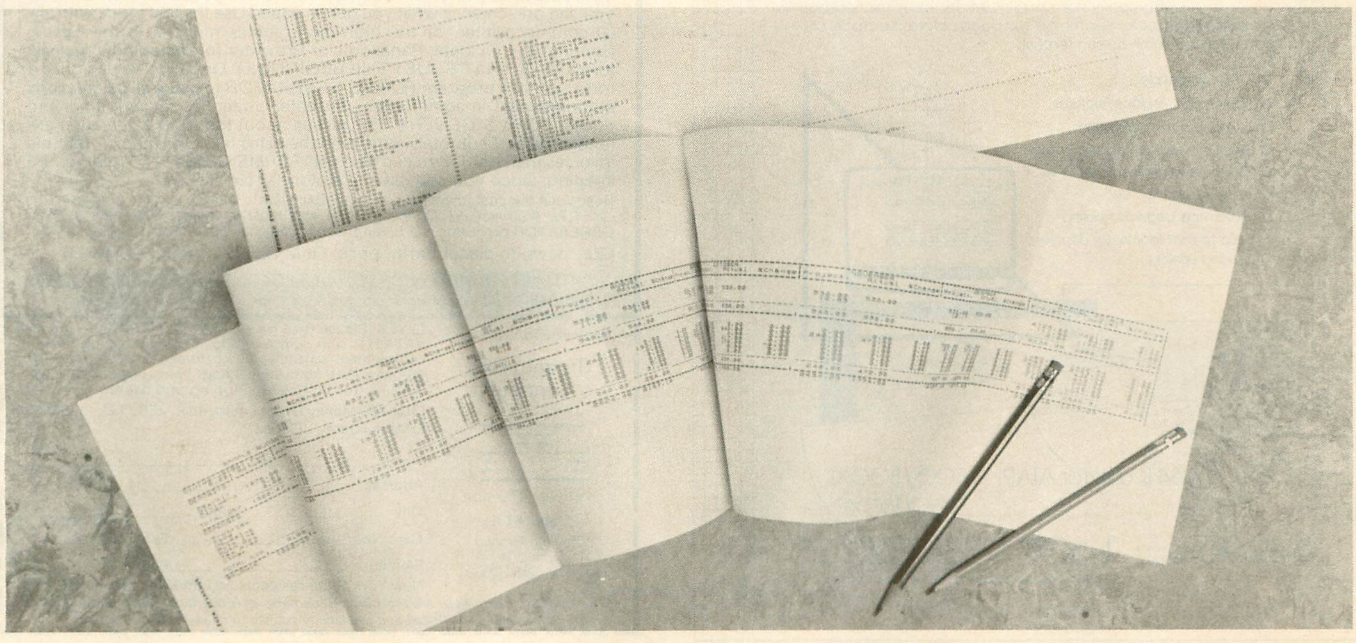
PROGRAM OPERATIONS

1. While in your spreadsheet program, turn off window and title options and remove any printer commands (such as condensed print).

2. PRINT your file to disk—don't SAVE it.

3. If the form is taller than 80 rows, you will need to print your form to disk in horizontal sections (80 rows high times the width of your form). Those with wide carriage printers can change the 80 in lines 90, 220, and 520

continued on next page



Mary Rhomberg Peloquin

of TAPELESS.BAS to allow for the number of columns your printer can accommodate at 10 characters per inch).

4. Turn off the computer and insert your Tapeless disk. Turn on the computer and follow the instructions on the screen.

SYNCALC TO DISK

1. Press [OPTION].

2. Choose LOAD/SAVE.

3. Choose SAVE.

4. Choose TEXT.

5. Set RANGE by cell numbers. Remember: 80 rows maximum per horizontal section to print out.

6. Enter filename. (SynCalc adds a .TXT extender automatically.)

7. Press [RETURN].

8. Load the Tapeless disk and follow the instructions onscreen.

VISICALC TO DISK

1. Position the cursor at cell A1.

2. Press [/] to get the command menu.

3. Press [P] for Print.

4. Press [F] for File.

5. Input D:FILENAME.TXT

6. Press [RETURN].

7. Specify the lower right cell (Remember: 80 rows maximum per horizontal section to print out.) and press [RETURN].

8. Load the Tapeless disk and follow the instructions on the screen.

SPEEDCALC TO DISK

1. Position the cursor on the lower-right cell to be printed.

2. Press [CONTROL] [P] to print.

3. Enter D:FILENAME

4. Now move the cursor to the upper-left cell to be printed. (Remember: 80 rows maximum per horizontal section to print out) Press [RETURN].

5. Load the Tapeless disk and follow the instructions on the screen.

Bob Grunbok is a water treatment plant operator from Newhall, California. He has been programming Atari computers since 1981.

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Atari Animation: Lesson 3

Animation Editor and LinkBAS

BY ROBIN ALAN SHERER

Two vital programming tools that will be used throughout this intermediate BASIC series are presented here. Animation Editor is a professional-quality character set editor that includes powerful image-moving features. This BASIC program works on 8-bit Atari computers with a minimum of 32K memory and a disk drive. LinkBAS is a short BASIC subroutine that converts machine language code into ATASCII string variables for use in your BASIC programs. It runs on all 8-bit Atari computers with a disk drive.

Last month we promised you some powerful software tools that would greatly simplify your creation and use of redefined characters—the basis of Atari Animation.

So before going on to add more details to our haunted house animation sequence next month, we need to introduce two stand-alone utilities that will be used often in upcoming lessons.

The main program is the Animation Editor, a full-featured character set editor. In many ways, Animation Editor is similar to *UltraFont* (**Antic**, August 1986). However, because Animation Editor was specifically written as a tool for helping you make Atari images move, it also offers the following two unusual features

• ANIMATION: Select a sequence of redefined characters—such as the #$% sequence we modified into the little robot last month—and alternate these characters in the same spot on the screen at various speeds.

• BUILD: Construct composite characters by combining four stacked character shapes into one larger unit.

Our second animation tool this month is LinkBAS, a useful short routine that converts assembly language object code into data variables for use in your BASIC programs.

ANIMATION EDITOR

To obtain your own Animation Editor, type in Listing 1, CHAREDIT.BAS, check it with TYPO II and SAVE a copy before you RUN it.

Antic Disk owners will find a faster machine language version of this program on the monthly disk. Use option L from the DOS menu to load CHAREDIT.EXE.

The type-in version and the Antic Disk version of Animation Editor look alike, use the same commands, and do the same work. The only difference is the faster operating speed of machine language. You can make CHAREDIT.EXE load automatically or run by copying it to a separate disk with DOS 2 or 2.5 and renaming it AUTORUN.SYS.

When you RUN Animation Editor, you will see that the main screen is divided up into five major work areas—Editing Grid, Character Image Display, Menu, Character Set Display, and User Input Prompts.

EDITING GRID

Each of the 64 rectangles in the Editing Grid display represents a bit, and each horizontal row of bits represents

continued on next page

a byte. This is the main work area for editing, animating, or building composite characters.

CHARACTER IMAGE

Whenever you edit a character, the Character Image boxes show you what it will look like in three different graphics modes.

The first box shows the character in Graphics 0—the mode in which the character editor runs. To the right is Graphics 1 (double-height characters) and below is Graphics 2 (double-width and double-height). For clarity each character is a different color, but the colors have no other significance.

MENU

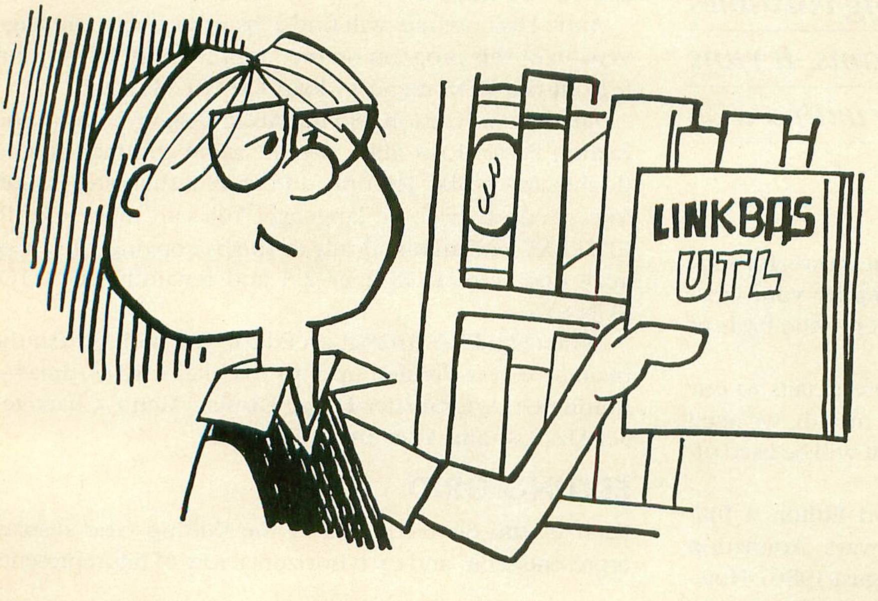
The Menu is a list of the Animation Editor's major function commands. Type the first letter of a function to select it. (For example, type L for the [L]OAD function. The command would be indicated in the text as [L].) When a function is selected, it is highlighted in blue. NOTE: Do NOT press [RETURN] after selecting your function.

CHARACTER SET DISPLAY

The entire character set is seen in the Character Set display. When you want to GET or PUT a character, the cursor jumps here to find it. NOTE: You may edit only 126 of the 128 characters in the character set. You can't edit the [BACKSPACE] or [DELETE] delete characters because they're specially modified and colored for the Editing Grid. Their color comes from artifacting.

I/O BOX

The I/O Box on the bottom left of the screen displays error messages and other information. For example, here is where you'll type the filename of the character set (font) to be LOADed or SAVEd.



KEYBOARD COMMANDS

The CURSOR mode on top of the menu is highlighted in blue whenever you're working in the Editing Grid. Six functions are available in this mode:

1. Move Cursor: Use the [ARROW] keys to position the cursor within the Editing Grid. Do NOT press [CONTROL] or [SHIFT].

2. Write Cursor: Use this function to draw and erase within the Editing Grid. If the cursor is on a blank square, pressing [CONTROL] and any [ARROW] key will fill-in that square. If the cursor is already on a filled-in square, pressing [CONTROL] and any [ARROW] key will erase that square. NOTE: This function will also move the cursor in the direction of the [ARROW] key you pressed.)

3. Home Cursor: Press [H] to move the cursor to its "home" position; the upper left corner of the Editing Grid. [CONTROL] [H] moves the cursor to the lower right corner.

4. Shift Grid: [SHIFT] [ARROW] slides the character in the editing grid one row in the direction of the [ARROW] key.

5. Byte Values On/Off: To see the byte value of each row in the editing grid, press [N]. To turn off these values, press [CONTROL] [N].

6. Cursor On/Off: The cursor must be visible before you can edit a character. Sometimes, though, it may distract you from properly seeing the pattern you've created. When this happens, press the [SPACEBAR] to turn the cursor off. Press it again (or press an [ARROW] key) to turn it on again.

SAMPLE CHARACTERS

Before we proceed, let's get a character set that we can experiment with. Here is a short routine which will copy a character set to a disk file called "D:DEMO.FNT"

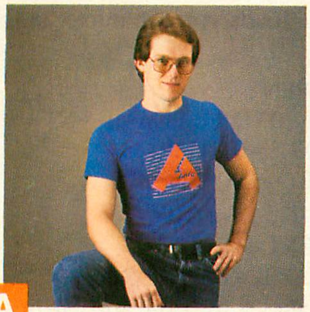
```
31900 OPEN
      #1,8,0,"D:DEMO.FNT"
31910 CSET=PEEK(756)*256
31920 FOR BYTE=0 TO 1023
31930 PUT #1,PEEK(CSET+BYTE)
31940 NEXT BYTE
31950 CLOSE #1
```

RUN the current Haunted House listing (July's HAUNT02.LST as merged with HAUNT01.BAS from the June issue) to redefine your character set. As soon as you see the little robot on the screen, press the [BREAK] key, type the above routine, and then type GOTO 31900. In a moment, you'll have a DEMO character set that you can use with this month's editor.

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Wear It Out!



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T-SHIRTS. This Official Antic T-Shirt is worn by many of our staff. Made of cotton and polyester to hold their shape and good looks. Blue only. S–M–L–XL



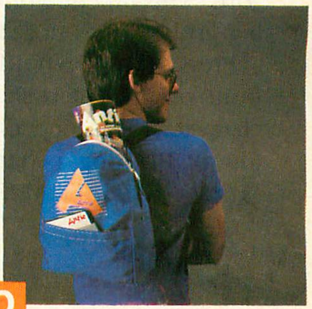
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LOAD and SAVE

Use these functions to LOAD and SAVE character set files to your disk.

Press [L] to LOAD a character set and [S] to SAVE one. Then, type the name of the file to be LOADed or SAVEd.

With both LOAD and SAVE, you don't need to enter a filename extender, because the default is .FNT. Exit by pressing [RETURN] before entering a filename.

Press [G] and [RETURN] to GET a character from the Character Set display area and move it onto the Editing Grid. The [ARROW] keys position the cursor over the character you want to edit. Both the character and your cursor will move to the Editing Grid.

Once on the grid, you may edit the character by using the [ARROW] key commands described above.

Press [P] to move the character from the Editing Grid and PUT it into the Character Set. This is the reverse of the GET command. With this command, you may edit a character and PUT it anywhere in the character set.

You can also PUT copies of a single character into several spots. For example, if you are creating several similar versions of a character and only a small part of each character needs to be redrawn, PUT several copies of the basic character into the Character Set. Finally, edit each copy, adding the parts which are different.

Press [C] to CLEAR the editing grid, setting all bits to "off." This function only erases the character in the editing grid. It does not affect any other characters.

Press [R] to RESTORE the character in the editing grid to its original Atari shape. It does not affect any other characters. This function is only active when you are GETting or PUTting a character.

Press [I] to INITIALIZE the character editor. This function restores ALL of the characters to their original Atari shape.



ANIMATE

Press [A] to Animate a moving sequence of characters in both the Editing Grid and the Character Image display. The Animate function will ask you for the characters to be animated.

Enter the characters to be animated and press [RETURN] to start the sequence. Press [S]low or [F]ast to control the speed of the animation. Press [Q]uit to stop the routine.

If you LOAD the DEMO character set described above, and Animate the [#], [$] and [%] characters, you'll see last month's little robot stomping around.

BUILD

A composite character looks like a large character, but is actually made of several combined standard-size characters (such as last month's larger robot).

Press [B] to Build a composite character, then enter the four characters to be used. Fill some of these characters with blanks to create smaller composite characters.

The characters you enter will appear in the Graphics 2 Character Image Display box.

Press [Q] to [Quit] the program. The program will ask you if you're sure you want to exit. Any response other than [Y] returns you to the program.

USING CHARACTER SETS

File I/O: The following routine loads your character set into RAM:

```
2000 OPEN
     #1,4,0,"D:FILENAME.FNT"
2010 FOR I=0 TO 1023
2020 GET #1,BYTE
2030 POKE CA+I,BYTE
2040 NEXT I
2050 CLOSE #1
```

File I/O takes some time and can be annoying if you have more than one character set to load. Also, extra I/O and support files can cause even more delays.

The main advantage of the above File I/O routine is memory conservation, but if your program is reaching your Atari's memory limits, it might be wise to store the character sets in a separate file. In this case, you may want to use a speedy USR function to load your character set. (See this issue's *Haiku Master*, lines 200-220 for an example of this technique.)

RESIDENT CODE

Resident code means that the character set is contained within your program, either in DATA statements or

string variables. This example shows a character set in DATA statements:

```
2000 RESTORE 7000
2010 FOR I=0 TO 1023
2020 READ BYTE
2030 POKE CA+I,BYTE
2040 NEXT

7000 DATA 0,0,112,134,34,2,2,0,0,65,65
7010 DATA (another 1013 numbers)
```

One major disadvantage to the resident code technique is that DATA statements consume a lot of memory. You are using a three-byte number like 112 instead of a lowercase p with the same ATASCII value of 112. If you used string variables to hold the data, it would look like this:

```
2000 DIM CS$(1024)
2010 CS$(1,100)="BEGINNING OF 1024 ATASCII
CHARACTERS REPRESENTING"
2011 CS$(101,200)="BYTE VALUES"
2012 . . .
2013 . . .
2014 CS$(1000,1024)="END OF 1024 ATASCII
CHARACTERS"
2020 FOR COUNT=0 TO 1023
2030 BYTE=ASC(CS$(COUNT+1,COUNT+1))
2040 POKE CA+COUNT,BYTE
2050 NEXT COUNT
```

This is more practical in terms of memory conservation, but it's still slow. It also requires some method to interpet the byte values into ATASCII characters. That method is contained in our second utility, LinkBAS.

LINKBAS

LinkBAS is a "quick and dirty" utility that translates assembly language object code into ATASCII character strings. Add these to your own BASIC programs to replace clumsy READ/DATA initializations, conserve memory and improve program speed.

When RUN, LinkBAS reads a binary file (such as a character set or an assembly language object file) and writes a corresponding BASIC file which you may ENTER into your own BASIC programs.

Type in Listing 2, LINKBAS.BAS, check it with TYPO II and SAVE a copy. When you RUN it, the first prompt you'll see is for a destination filename.

After LinkBAS creates your BASIC file, it will use this filename to store it on your disk. The default filename is TEMP.LST which you can choose simply by pressing [RETURN].

Your DESTINATION file (the BASIC program that LinkBAS creates) may begin at any line number. At the next prompt, enter a starting line number for this program. Each successive line number will be incremented by 10. The default line number is 2000.

Make sure that the number you choose is *larger* than the highest line number in your BASIC program.

At the SOURCE/VARIABLE <@> prompt, enter the name of your SOURCE file. You don't need to type the "D:" device identifier.

Your filename should be followed by a slash [/], along with the name of the string variable that LinkBAS uses to store the data in the destination file. You don't need to put a [$] after the variable name.

If you want your destination file written to the same disk as your source file, add a [@] to your response.

EXAMPLES

Legal	Illegal
DEMO.FNT/CHAR$	DEMO.FNT
DEMO.FNT/CHAR$@	DEMO.FNT@

To end LinkBAS, just press [RETURN] at the SOURCE/VARIABLE <@> prompt, and you'll be returned to BASIC.

RECOMMENDED BOOKS

Your Atari Computer by Lon Poole. Osborne/McGraw-Hill, 2600 Tenth Street, Berkeley, CA 94710. (415) 548-2805. $17.95, 474 pages.

Mapping the Atari by Ian Chadwick. Compute! Publications, Inc. (ABC), 825 Seventh Avenue, New York, NY 10019. (212) 887-5928. $16.95, 272 pages.

Robin Sherer is the co-author of four Atari programming books. He currently lives in the Seattle area.

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When you want to talk Atari

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ST HARDWARE

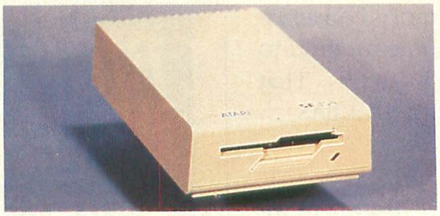


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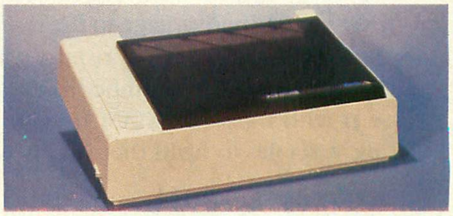


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Okidata
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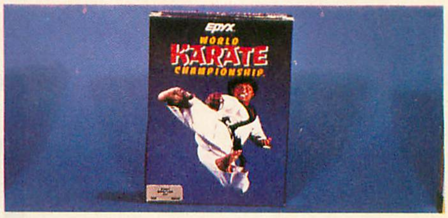
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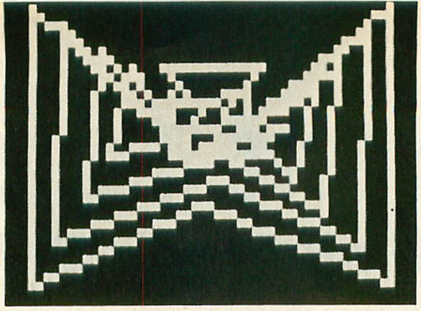
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BY ROBERT GEDDINGS

Polymove

Tweening—computer animation's new tool

Polymove introduces you to "tweening," the computer process that removes much of the drudgery from animated cartoon drawing. This BASIC program works on 8-bit Atari computers with a mininum of 32K memory, disk or cassette.

Even with the computer-generated effects in movies such as "TRON" and "The Last Star Fighter," cartoon animation is typically still considered a job for human artists—where computers probably would not be too useful. But this is changing.

For every second of animated film action there must be 36 hand-painted "cels" (pictures drawn on transparent celluloid). And depending on the amount of movement in the scene, many consecutive frames are nearly identical. This means a lot of repetitive work is dumped on artists.

If you take these poor, harried artists and move them up to the computer age, you get *tweening*—an odd name for a very logical evolution. As I said, consecutive animated frames often are basically the same, with only small variations needed to indicate motion. And a computer's forte is doing repetitive tasks very quickly.

Tweening is simply the process where an artist draws out the *key* frames—frames that have a significant amount of motion or articulation in the characters—and the computer generates the required number of *in-between* frames.

POLYGON TWEENING

My Polymove program is a simple example of tweening. It lets you create as many as 10 eight-pointed shapes (polygons). Then it calculates the interval steps and cycles through the transitions. Polymove works in Graphics 3, 5, 7 and 8. If you own an XL or XE, Graphics 15 is also available.

Type in Listing 1, POLYMOVE.BAS, check it with TYPO II and SAVE a copy before you RUN it.

To select one of the eight points on your figure, press the joystick button. The short beep tells you that the point has been noted. If you have trouble positioning the cursor, press [START] to temporarily stop movement and display the X,Y coordinates in a text window. When you're done, there will be a longer tone and the cursor will return to the center of the screen. When all eight points are entered, you can cycle through them once or endlessly. If you select endless, press the joystick button to return to the menu.

Again, this is just a *simple* example of tweening. To create a full-blown system, you'd have to give it the ability to handle hundreds—if not thousands—of individual data points. It would require a plotter output hundreds of times denser than the Atari screen. Also, my system is linear, assuming that each point is headed directly to the next in a straight line—which is not normally the case. For instance, when you raise your arm, it doesn't just shoot straight up, it sort of sweeps up in an arc.

If you want to experiment with POLYMOVE, here is one simple trick. You can remove the PRINT statements in lines 200 and 360. This leaves each of the tween steps onscreen as it changes—a kind of visible trail.

Finally, this program was written with BASIC XE ($79, OSS), on which it runs quite fast. However, you do not need BASIC XE to RUN Polymove. When you use Polymove with regular Atari BASIC, the slowdown is not annoying, but don't expect to make a real-time movie of your image shifts.

Robert Geddings of Eugene, Oregon says he has been an Atari lover since 1984. Recently he decided to see if he could actually program anything. Tweening was it.

Listing on page 63

Diamond Dave

Robot miners vs. radioactive mutant prairie dogs

BY STEPHEN STOUT

Diamond Dave is a humorous action game that's refreshingly non-violent. Your job is to guide robots through a radioactive diamond mine while dodging mutant prairie dogs. This BASIC program works on 8-bit Atari computers with a minimum of 32K memory, disk or cassette.

Big trouble has come to the Diamond Dave Corporation. It seems that the head of Diamond Dave, Mr. Dave himself, risked most of the company's assets to start a diamond-cutting factory in the Philippines. Unfortunately, Mrs. Marcos liked jewelry so much that she had her husband confiscate all the diamonds before they left for their permanent vacation in Hawaii.

Upon hearing of Dave's bad luck, the Boesky Investment Insiders, never one to miss an opportunity, began attempting to take over the Diamond Dave Corporation.

"Look, just give me a month," Dave begged the DD Corp. stockholders. "I'm really close to a major strike. If I don't find it in the next month, then you can sell your stock to Boesky."

The stockholders agreed to give Dave a month before they sold him out. Dave, of course, was lying and didn't have any idea what to do.

ARIZONA AWAITS

Dave thought and thought. Then he thought some more. Then he watched a re-run of The Beverly Hillbillies. (Jed bags a talking three-eared rabbit, while Granny accidentally swallows the cement pond. Guest appearances by Lester Flatt and Earl Scruggs as their evil twins.) And he listened to his favorite record, "Slim Whitman's Greatest Hits" (not available in stores). He still didn't know what to do. Then, while he was going over some geological studies, it struck him—Arizona!

There was a section of Arizona desert with an abandoned mine that looked like a good prospect—except for a small problem. During the 1950s this desert was used for underground nuclear testing. The radiation level would still be too high for humans to mine there. Also, there have been persistent rumors of mutated giant killer prairie dogs being seen in the area.

Dave sought help from his DD Corp. Genius Department. His senior technical genius, Duane "The Wild Man" Buane, said it *might* be possible to do the mining with some new car-manufacturing robots, but it's never been tried before.

However, Dave was at his wit's end—by now he'd try almost anything. So he took his company's few remaining dollars, bought five robots and set up a small base in the desert.

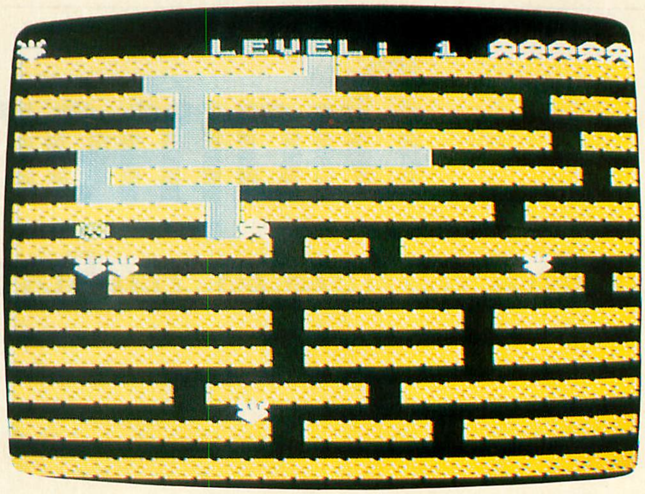
START MINING

The fate of the Diamond Dave Corporation now hangs in the balance. And you have just signed on as Dave's chief robot operator. You must move the robots through the mine, picking up all the diamonds you find.

The robots are already hooked up to their long spools of cable. Yes, they must be controlled and powered by wire. Radioactivity in the mine is so high that shortwave remote-control transmissions would be jammed.

As your robots enter the mine, you swiftly discover that those rumors of giant mutant killer prairie dogs aren't rumors at all. Mutated prairie dogs are cruising the tunnels. And just one of their radioactive touches would be enough to destroy your robot or its control line. Luckily,

continued on next page



those cables attached to the robots allow you to pull them out of the mine instantly.

Control your robot with a joystick plugged into port 1. Each robot starts the game at the top of the screen. Robots can travel through any clear passage in the mine, although they cannot go off either side of the screen. The blue line trailing behind a robot is its control cable.

The green and red mutant prairie dogs move horizontally. If one is about to destroy your robot, press the joystick button and your robot will be whisked to safety at the top of the screen. Remember, Dave could only afford five robots. If all five are destroyed, you have lost the game.

Your goal is to collect all the diamonds in the mine. (The high radioactivity in the area makes them glow.) Each screen has five diamonds, and when you collect them all, you go to the next screen.

The number of mutants on a screen is the same as the Level number. If you complete Level 11—a mutant in every mine passage—you win the game.

TYPING IT IN

Type in Listing 1, DIMNDAVE.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you have trouble typing the special characters in line 620, Listing 2 will create that line for you.

Type in Listing 2, check it with TYPO II and SAVE a copy before you RUN it. When RUN, Listing 2 creates a file called LINES.LST. (Cassette owners should use a separate cassette). Now, disk owners type LOAD "D:DIMNDAVE.BAS" and then ENTER "D:LINES.LST". (Cassette owners should CLOAD Listing 1 and ENTER "C:" the file created by Listing 2). Remember to SAVE the completed program before you RUN it.

WARNING: Repeated playing of this game has resulted in hair loss and occasional glowing in the dark.

Stephen Stout, 18, hails from Fort Walton Beach, Florida and shows disturbing signs of being another wild game designer in the tradition of J.D. Casten.

Listing on page 64

AGE OF ADVENTURE

Electronic Arts
2755 Campus Drive
San Mateo, CA 94403
(415) 571-7171
$14.95, 48K disk

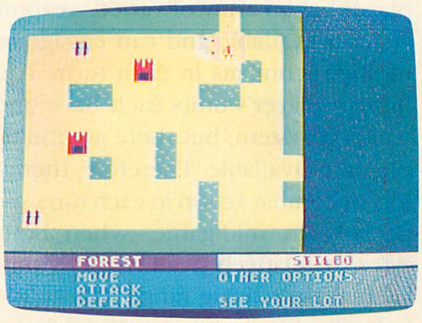
Reviewed by Gregg Pearlman

Ali Baba and Heracles, immortalized in mythology, literature and grammar school film strips, come alive on your Atari in **Age of Adventure**. Electronic Arts' new two-game reisssue package contains Ali Baba and the Forty Thieves plus The Return of Heracles. This package is also essentially two variations of one fairly good game format.

Each game has specific quests: Ali Baba and the Forty Thieves sends you on a search for the Sultan's kidnapped daughter, Princess Buddir-al-Buddoor. In The Return of Heracles, you must complete the famous Twelve Labors of Heracles. Both games let you control several characters at once, but only those in Ali Baba can be reincarnated. Decisions are made by cursoring through an options window with the joystick or keyboard.

Ali Baba is the earlier and better of the two games. Your party can feature humans such as Haroud El-Large, a sort of Hulk Hogan-type whose sheer strength makes him as clumsy as he is deadly, and Abdalla, a prisoner (and oaf) you can free—though you may not want to. Other group members include the "rithmil"-attired Celegorm, a sort of all-American elf, the halfling Cinder, who's slow, strong and short, and the dwarf Jatte, the Sultan's strongest warrior.

As you look for the princess, you'll come across hoards of gold ducats, with which you can buy armor and weapons, hint-filled runes, and, more importantly, various thieves and creatures who'll gleefully hack you to ribbons if you're not careful. Those to avoid include Minotaurs (in a sort of



cross-mythology from ancient Greece), Sun, Earth and Sky Wanderers, zombies, succubi and, of course, the dreaded Oozing Stenchbeast. Somewhat helpful, however, are Nell the Unicorn, Aladdin and, for some reason, Dr. Who.

The drawback to these ghoulies, ghosties and long-leggity beasties is that, ideally, you're not supposed to harm any of them. This is harder than it sounds, and you'll probably find yourself mincing your opponents out of necessity—or just as a change of pace.

And pace is where the game bogs down. Of the five speed settings, the default is 2 (and 5 isn't all that fast), but the game accesses the disk drive often enough to make your head spin.

Deaths are, shall we say, flamboyant in this game. People or creatures often "turn the toes up to the daisies"

Based on the works of Robert Graves, The Return of Heracles keeps Greek things Greek—including the character set, which is in the kind of eye-wrenching, pseudo-ancient-Greek style found in low-budget films about that era. Adding to (or detracting from) the atmosphere are strange, ear-wrenching little tunes, supposedly played on lyres but actually provided by two Atari voices about a quartertone apart. Heracles has nine settings of both monster and message speed, but, as with Ali Baba, the disk drive is accessed constantly.

However, this game is not without its sense of humor. Most characters depart the game by getting dusted in hand-to-hand combat, but there are other ways to leave the action. For instance, if you stand on the threshold of Mount Olympus, you could be rewarded, cursed, cast into Hades or turned into a crab.

The graphics in both games are fairly simple. In Ali Baba, the characters are unmoving icons—fez-adorned heads for elves, stick figures for halflings and E.T. lookalikes for humans, to name a few. In Heracles the characters are represented by two alternating icons—some characters wave swords back and forth, the dogs pant—and so do the amazons.

Age of Adventure is generally a fun package that could keep you happily occupied for several hours. Neither game's puzzles are easy to crack, and they just might obsess you enough to stay riveted to your computer until you solve them.

OGRE

Origin Systems, Inc.
340 Harvey Road
Manchester, NH 03103
(603) 644-3360
$39.95, 48K disk

Reviewed by Dr. John Stanoch

When Steve Jackson first released **Ogre** as a board wargame in 1977, it was hailed as a design triumph and swiftly attained the status of "classic." However, in the early '80s when home computers started to burgeon, many wargamers put away their cardboard counters and picked up joysticks. The cardboard version of Ogre became affectionately remembered, but seldom played.

Fortunately this fine game has now been electronically resurrected by Origin Systems. Ogre takes place on a hypothetical battlefield in the 21st century where "Ogres"—huge computer-controlled cybernetic tanks, dominate the conflict. Against this nearly indestructible robotic juggernaut, humanity's defense can muster

continued on next page

an array of specialized high-tech weapon systems, including mobile and stationary howitzers, heavy and missile-armed tanks, armored infantry and the versatile ground effect vehicle.

To win, Ogre players must maneuver their machine across most of the board and through the human defenses to destroy the all-important command post. Human players win by simply preserving the command post. The strategies available to both sides offer a wide variety of subtle decisions which can determine the difference between winning and losing.

Ogre has top-notch graphics which show the various unit types clearly and distinctly. The map is almost an exact replica of the original version, showing a 14×22 hexagonal (hex) grid. About 75% of the map length is shown onscreen at once, and you can scroll smoothly through its entire length.

The terrain features are color-coded and portray clear, cratered and rubble-strewn surfaces. But Ogre does not stop at excellent graphics. The game's inviting user interface is one of its strongest points. GEM-like tools including dialog boxes, drop-down menus and "double-clicking" are used via *joystick* input to perform most of the main functions. These methods make Ogre incredibly easy to play.

One excellent feature is the inclusion of a range "button." After targeting a given unit and pressing this button, that unit's silhouette is surrounded by concentric rings of hexes. All of the hexes into which the owning player's unit can move or fire are highlighted.

Combat is performed by arriving at a combat odds ratio—the attacking unit's attack strength is compared to that of the defender's defense strength. Before executing the actual combat by pressing the "fire" button, the computer gives the player the percentage chance of a hit. The Ogre player has an array of varied weapon systems available and can engage in multiple combats in each turn. The human player's units each have one weapon system, but there are multiple units available. Therefore, there's lots of combat action in each turn, especially in mid-game, when both sides are relatively healthy and within each other's firing range.

Lastly, this game has options allowing players not only to change the map terrain and initial unit placement, but also to vary the message speed and the Ogre's skill level in the one-player version. A player can even play a game not conforming to the official rules of game setup.

I can't recommend this game highly enough. I thoroughly enjoyed playing it and will probably boot it up again when I finish this review.

BRANCHES, TWIGS

Sysco Software
939 Bross Street
Longmont, CO 80501
(303) 651-3936
Requires BASIC, 40K disk

FAMILY HISTORY

Direct Lines Software
4755 Bamboo Way
Fair Oaks, CA 95628
(916) 965-7555
48K disk
Reviewed by William Benbow

Your 8-bit Atari computer, coupled with effective software, can be a powerful genealogy research tool. **Branches** ($45) and its companion program **Twigs** ($25) from Sysco Software are powerful, full-color programs requiring 40K, Atari BASIC, one disk drive and an Epson-compatible printer. (Because this package involves a fair bit of disk swapping, two disk drives are a good idea.)

Branches, the main database program, organizes genealogical data on family and individual worksheets. Family members are numerically coded, with odd numbers assigned to women and even numbers to men. From this data the program creates five-generation pedigree charts. Each data disk contains records for five generations, including up to 160 children for the 16 great-great-grandparent families. One interesting feature is a timeline with brief accounts of selected dates between 1400 and 1969 to provide historical perspective.

Twigs tracks indirect relatives and provides individual worksheets for cousins, nieces, nephews, et al. Up to 60 more data files are allowed on the Branches data disk, so you can print descendant charts to the screen or printer. You can also determine the relationship between any two people on the same data disk by typing in their respective code numbers.

The package is easy to operate. Its well-written, complete manuals provide step-by-step instruction. Sysco Software is developing a revision that lets you print the worksheets to a disk for use with a word processor that reads ATASCII files, so such data could be included in written reports.

The main problem with this package is its limit of five generations per disk. Some storage capacity is given up for the timeline feature. A full five-generation pedigree would appear to be possible only for the first generation. Also, the program is slow because it's in BASIC. And the worksheets are cumbersome—they separate data into individual and family information, requiring additional searches for certain details that aren't listed on the family worksheets.

Family History ($39.95) by Direct Lines Software is an even more powerful package. It requires 48K, a disk drive and an optional 80-column or 132-column printer. (Again, a second drive is a good idea.) There is no limit to the number of family member records that can be kept, if you expand

the data to extra disks. Each disk can store more than 500 individual records of 150 characters each. A record can be 394 characters long, containing 41 fields with up to four spouses, and 15 children per marriage.

Family History can locate direct relatives for five generations, and a five-generation pedigree can be printed for *anyone*, not just those in the first generation. An index is maintained and sorted separately from the primary data disk. Individual records are located by identification numbers designed to simplify data storage and avoid data duplication in related files.

Four reports can be printed to screen or printer: an individual record of all data from *all* records in the file; a comprehensive family group chart on any individual in the data base, including all immediate family members' names; a pedigree chart for five generations; and an index sorted by name or identification number.

This program has an easy-to-use main menu for choosing five subprograms: File Manager, for editing records; Print/View, for family group charts; Pedigree Chart, Index and Utility—which lets you format and initialize a disk and compress a file to increase data storage. This removes the empty spaces between records and provides for a backup copy.

Family History's main advantage is that it is open-ended in terms of generations, permitting much more flexibility in searching and in producing pedigree charts. It was originally written in BASIC, but it has been compiled, so it runs 10 times faster than a BASIC program. This is valuable for searching large files. Also, it supports double density for increased storage capacity and fewer disk swaps.

However, the pedigree chart lacks place names and is limited to birth and death dates—ignoring marriages and birthplaces. Also, though it can use a letter-quality printer, it only takes paper that's 11 inches wide. And, though the manual is well written, it would help to have more information on assigning identification numbers. The computer can do this automatically, but since there are provisions for personally devised systems, examples would be useful.

While Family History is the more powerful and useful of the two packages, Branches and Twigs has advantages too, such as the timeline, files showing indirect relationships and a descendants chart. Both Family History and Branches have upcoming revisions that include utilities for allowing data translation with other types of computers.

USAAF

Strategic Simulations, Inc.
1046 Rengstorff Avenue
Mountain View, CA 94043
(415) 964-1353
$59.95, 48K disk
Reviewed by Rich Moore

USAAF gives you command of either the U.S. Army Air Force bomber groups or Axis air defenses in World War II Europe. You can refight the entire air war from 1943 to 1945, a day at a time. Or you can play a shorter game covering just 30 days from one of three starting dates. Both sides can be handicapped to provide for more challenging competition against either another player or the computer. The computer can take either side—or even both sides, if you just want to sit back and watch.

The U.S. commander's job is to slow the Nazi war machine by attacking a dozen types of strategic industrial targets, mostly as the commander sees fit, but sometimes subject to high-level political goals set and enforced by the computer. While the U.S. goal is to destroy enemy industrial capability, strikes against factories which support the Luftwaffe inevitably affect Axis air defenses. Bombing enemy airfields can be productive, provided the fields have air groups assigned to them. New types of aircraft become available to replace older models according to their historical introduction dates.

The Axis commander must successfully prevent his industries from being heavily damaged at the end of the game. Fighter groups can be moved among 96 airfields and anti-aircraft batteries repositioned between cities everywhere on the continent. New flak batteries are produced in armament centers during the game. New air groups also appear according to history, but the commander can accelerate the availability of new fighters by controlling aircraft production.

While strategically oriented, the game takes on a very tactical flavor when scheduling raids or defending against them. The Axis commander can be kept extremely busy. USAAF is quite complex at first and will force you to do some "operations analysis" to discover how to best employ your forces. Instructions for the game are thorough and include some useful tips that parallel history.

The software spends a *lot* of time reading routines from disk, which lengthens a game considerably. Quite a bit of time could be saved if the game could check for a 130XE and set itself up for RAMdisk I/O.

The graphics are adequate but disappointing in light of other war games done by SSI. USAAF appears to be a direct conversion from Apple BASIC to compiled Atari BASIC without any upgrade to take advantage of the Atari's scrolling or joystick.

Like many of SSI's games, the cursor is not controlled by the regular cursor control keys, but by the number keys. I finally had to make a strip of paper with the "directions" drawn on them and place it above the number keys on my computer, but control is still awkward since the "move left" keys are located to the *right* of the "move right" keys. For $59.95, I would expect friendlier software.

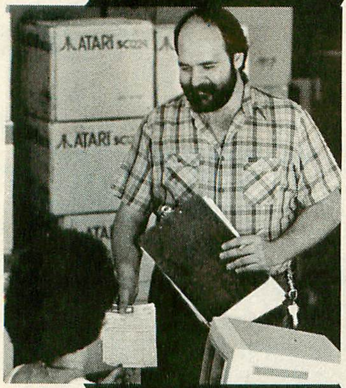
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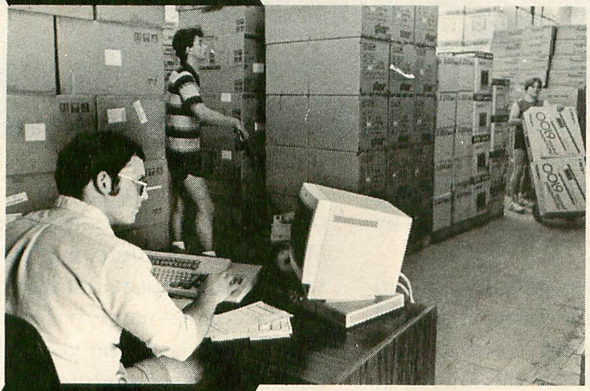


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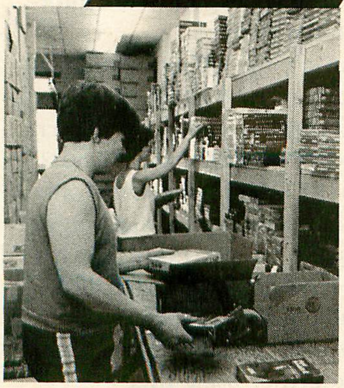
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CompuTalk: Texas-Sized BBS

20Mb hard disk networking six Atari 800s

BY GREGG PEARLMAN, ANTIC ASSISTANT EDITOR

In the Texas tradition of doing things BIG. . . Computalk of Fort Worth may well be the largest online Atari bulletin board system (BBS) operated by a private individual.



Computalk consists of six 48K Atari 800 computers with modems and Atari 850 interfaces, all linked together via a 20Mb Corvus Hard Disk and Multiplexer. The BBS currently contains 2,000 download files arranged on 30 logical (simulated) disk drives—15 each for 8-bits and STs.

Sysop Kris Meier, 25, who founded Computalk in 1982, plans to add more material—even a compu-date system. The databases consist of seven multi-user online adventures, eight multi-user message bases and nine specialty sections. It all started with one Atari 800, an 850 interface, an 810 disk drive and a Hayes modem.

Meier bought the Corvus Hard Disk with Multiplexer and cables in 1984 for $3,500. Each Atari 800's joystick ports 3 and 4 are cabled to the Corvus Multiplexer, which plugs directly into the hard disk.

Computalk has six phone lines, one per computer. The system automatically shifts you over to the first free line. Only if all lines are busy will you get a busy signal.

The system currently runs on a "radically modified" version of the AMIS BBS program, written in BASIC with some machine language modifications. Computalk operates 24 hours a day at 300 and 1200 baud, and Meier plans to add 2400 baud by April 1988.

"Normally if two people want to upload at the same time, it would cause massive hard drive errors—you can't have two OPEN statements at once," says Meier. "But Tom Hudson (author of DEGAS and CAD-3D for the Atari ST) built a device that I call the Brain Box, which decides which file can access the drive at a given time for writing. Without that feature there would be no way to run this system."

Because each computer has only 48K, the BBS is programmed in modular form. The BBS loads and runs these modules the same way you'd load and run programs from a disk menu. The main BBS program welcomes callers to Computalk. Then it asks for an identification number or the word NEW, before letting you into the main BBS area.

"Once you're there, you've got nine other modules or 'rooms' to go into," Meier says. "A file called RUNMEM saves all the important information in your account—name, password, password level, last time you called. After loading the module you've chosen, the program goes back to that RUNMEM file and updates the information stored there."

CompuGab, the CB simulation, is in a three-file queue form. "Let's say you type faster than I do," says Meier. "You type 'How are things in Texas?' and press [RETURN]. But since I only type one character per second, you've already typed out two more lines before I can respond. Without the queue I'd miss all but the last line, but with it I won't miss anything. Six people can talk together using this."

When you log on, if you're not already a Computalk member, enter

NEW at the "ID# or NEW" prompt. This will send you to the new user area. New users who don't have valid passwords may only visit selected areas of the system, to guard against abuses.

35,000 CALLS YEARLY

Meier conservatively estimates that Computalk receives 35,000 calls a year. "It gets crazy in the summer and on holidays," he says. "The worst time of day to call is from 4 to 9 p.m., Central time, because that's when everyone gets home from school."

Members pay $15 for six months. There are no additional charges, and for every public domain file you upload, time is added to your account. "If you sent uploads once a week, you could have an unlimited account," says Meier.

Meier, "religion sysop" Bob Mele and assistant programmer Matt Pritchard run Computalk out of Meier's home. "I personally make no money from this," he says. "Every dime Computalk makes goes into a Computalk bank account, though I do pay Bob and Matt on a per-job basis, and my actual job pays for other expenses incurred."

The message bases have a wide range of topics. "In one message base you can say anything you want: why you're mad, why you shouldn't have been treated the way you were, etc.—and people respond to it," says Meier. "Here in the Bible Belt a lot of people keep up with religious issues, I started a religion section after I saw how much demand there was for it.

"Our CompuNovel feature is a do-it-yourself storybook. I start with a basic scenario, then you add to it, then someone else, and so on. Each chapter is a separate file—you can pick up where you left off, so you don't have to reread anything. So many people access it that I have to clear out the older material every week."

There's also an "Alien" game. As in the movie, you take off in the ship and destroy it, escape in the pod—all the while fighting aliens. If you die, the computer logs you off and you must start at square one. "If you could just keep playing instead of being logged off, you wouldn't try as hard," says Meier. "You'd just keep reincarnating. How much fun would that be? We have six adventures like that, and they're really popular."

Meier strongly suggests that 8-bit users play CompuTrek, programmed by Matt Pritchard. It's just like the standard Star Trek game—but for up to six players. You can log on as either a Federation ship or a Klingon. CompuTrek puts a graphics screen on your computer, as well as a status report. "It's incredible. Even *I'm* hooked," says Meier.

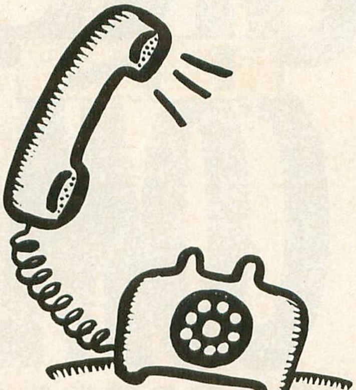
PHREAKING OUT

"The first year, my bulletin board got 500 to 600 callers a month—it was free," says Meier. "I had several phone phreakers (telephone 'pirates' who

continued on page 35

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For a flat $25 per month, **PC Pursuit** lets you make an unlimited number of long-distance online connections during evenings and weekends. This service is new from Telenet, a major reduced-rate long-distance online access service. PC Pursuit can be used from nearly 17,000 local telephone exchanges in 25 major cities. It's the most affordable way yet to get online with bulletin boards, specialized databases and major information services all over the U.S.

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COMPUTALK
continued from page 33

use phones illegally) trying to damage my system and get me into trouble."

A phreaker once called Computalk *collect*. "How could he have done that when there's just a connect tone on my system?" asks Meier. "No voice actually answers the phone. Finally, they traced it to a 12-year-old in Memphis. Somehow he pretended to be an operator. They almost put him away, but his parents were prominent doctors and paid his fines."

Meier, a public relations major with minors in computer science and psychology at North Texas State University in Denton, Texas, attends school from 9 a.m. to 1 p.m. Then he works on Computalk until it's time to go to his *job*—from 4 p.m. to 1 a.m.—as the night computer operator at A.B. Culbertson, a Ft. Worth securities company. Then he works on Computalk for two more hours. "That's not much sleep," he says, "but it's enough.

Why does he do all this? Perhaps a $490 CompuServe bill when he first started going online is the answer. "I didn't like spending so much money for a service and I wanted to build a system that Atari users could enjoy."

Meier would like a commercial online service to take over Computalk eventually. "I haven't looked into that," he says, "because part of me says 'You idiot, this is your *baby*.' I've had Computalk for five sweaty years. It's been up 24 hours a day—never down except for maintenance. It's hard to let someone else have it."

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Temperature Converter

Finding familiar Fahrenheit from cryptic Celsius and Kelvin

BY DAVID ZUBAK



Do you need your overcoat? It's 26 degrees Celsius outside. Seems as if different temperature measurement systems are really proliferating these days. But with the help of Temperature Converter, your Atari will swiftly translate betweeen Celsius, Kelvin and the familiar Fahrenheit measurements. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

You have just passed your neighborhood bank and entered the Temperature Zone.

Everything was fine until you glanced at the bank's digital time and temperature display. The clock was correct as usual, but the temperature could *not* have been right. On this typically warm, sunny spring day, the temperature was shown as 26, followed by a C.

A reasonable guess would be that C stands for Cold. But actually it stands for Celsius or Centigrade, a temperature scale based on the freezing and boiling points of water. Water freezes at 0 degrees Celsius and boils at 100 degrees Celsius.

Most of us are used to the Fahrenheit temperature scale, where water freezes at 32 degrees and boils at 212 degrees. We're most comfortable at temperatures between 70 and 80 degrees. But what temperature would be comfortable in Celsius?

Still another temperature scale is used in chemistry and other sciences. The Kelvin temperature is based on matter and its properties—0 degrees Kelvin is absolute zero, the temperature at which a pure gas will exert no pressure. Absolute zero equals −459.67 degrees Fahrenheit, −273.15 degrees Celsius.

Temperature Converter takes away the tedium and monotony of remembering these formulas. You won't have to touch a calculator, either. All you need to do is choose which conversion between Fahrenheit, Celsius and Kelvin you'd like and then enter the temperature to be converted. The rest is done at Atari warp speed. Type in Listing 1, TEMPCONV.BAS, check it with TYPO II and SAVE a copy before you RUN it.

Lines 10-40 set the screen and border color, open the keyboard for input and display the main menu. Lines 46-65 disable [BREAK], get your menu choice and send you to the appropriate conversion. Lines 100-650 contain the actual conversion formulas.

---

*David Zubak is a biology major at Broward Community College in Pompano Beach, Florida. Temperature Converter is his first publication in **Antic** and he wrote it after getting fouled up between different temperature measurements during a chemistry test.* Listing on page 65

THE ST RESOURCE

ANTIC AUGUST 1987

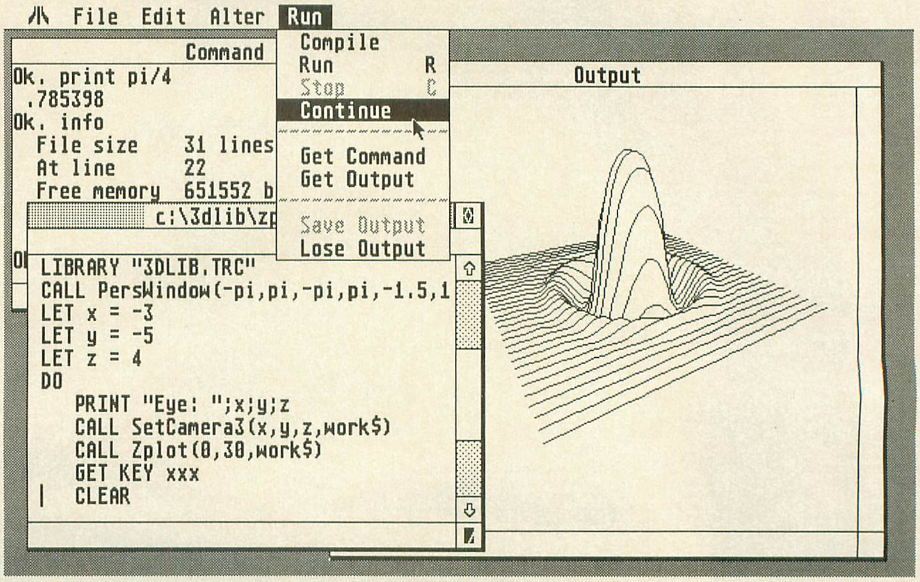


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ST Disk Subscribers: For instructions on how to transfer **Antic** ST programs to 3½-inch disk, see ST Help File on Side B of monthly disk. ST programs from previous issues are available in 3½-inch format from The Catalog.

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It never rains, but it pours.

For a long time, if you wanted a video digitizer for your ST computer you were limited to the HippoVision device and luck. Then, out of the blue, within the course of one month *Antic*'s offices were deluged with *three* ST video digitizers: **Color Computereyes**, **Print-Technik Realtizer**, and the **Navarone Video Digitizer**.

For a while, it became downright dangerous for any unwary employee to venture up onto the editorial floor of *Antic*. If they were caught, they were forcibly digitized. We digitized anything and everything, and became well versed with the three different units. We quickly picked favorites, and depending on the job, chose between two of the three.

Each video digitizer has its own unique setup, software, and eventual output. However, we found that all three could capture and display an image in either eight or sixteen grey shades on the ST color system, and also capture and display a high-res image on the ST monochrome system. Two of the video digitizers can also capture their images in color. Keeping this in mind, we decided to digitize a single scene with all three products, in each different way of digitizing the scene, and then photograph the results.

STILL LIFE CITY

Take a look at *Figure 1*. This figure has a collection of photographs arranged in three rows and three columns. Across the top, the columns identify the output of Computereyes, then Navarone, and Print-Technik on the right. From top to bottom, the rows identify the color, multi-grey, and monochrome output pictures. Notice there is no picture for Navarone color, as it doesn't support color. For our scene we picked a still life consisting of the three boxes the video digitizers came in. They were surprisingly colorful, and besides, now you know what the box looks like when you go out to buy a digitizer. We used an RCA color video camera, mounted on a tripod, and lit the setup with a 60 watt incandescent light bulb from two feet away.

Examine *Figure 2*. This is a standard color photograph of the boxes, so you'll have a point of reference. Take a moment and examine each image carefully. If you have sharp eyes you've probably picked out already that the Navarone monochrome picture seems to be split in half. Two of the digitizers, Navarone and Print-Technik, had trouble saving their pictures to disk in DEGAS format. We were able to use Disk Doctor, *Antic Software*'s disk-editing program, and repair the Print-Technik file so DEGAS could display it, but the other file was in a strange format, and we could not repair it without writing a small repairing program, so we chose not to. When we load the image in, it gets displaced, and that results in the picture appearing to be cut in half.

Now look at *Figure 3*. As contrast, this is a Computereyes multi-grey image of yours truly. Notice that it's not exactly pure grey, because the ST can only display eight levels of luminance, so the digitizer inserts colors "in between," by bumping up a single color register. Computereyes defaults to a rose color. The two other video digitizers only display up to eight distinct grey shades spread evenly over the sixteen-color palette.

THE NAVARONE

First, let's examine the Navarone Video Digitizer. This was a last-minute arrival, released the same week we performed this comparison. It comes in the same champagne-colored box the Navarone clock comes in, but doesn't afford the same bus pass-through their clock has. Instead, the video jack and a small trimmer pot knob take up the space. Plug the video digitizer into the cartridge port, plug your video source into the unit, turn on your ST and double-click on the Navarone video software program, VISION.PRG. The digitizer draws all the power it needs from the ST cart port. It synchronizes itself automatically to the incoming video signal, and then presents a dialog box on-screen for you to work from.

When we digitized our first image, we felt waves of nostalgia wash over us. Yes, this seems to be the Hippo Video Digitizer, repackaged and with new software. Taken in that light, the software is light years ahead of where it was. The images are sharp, and offer up to eight grey scales on the color screen, and dithered images on monochrome. However, the captured image is still much smaller than the display screen on the ST. Also, notice in *Figure 1* that although the camera wasn't moved, the Navarone seemed to capture much more at the top and cut off the bottom of the normal picture. It also seems to have squeezed the pictures horizontally. We worked trying to get rid of the vertical strip of noise present on the right side of each image. Playing with the small trimmer knob either locked up the ST, or devastated the image with noise. In two-color mode the Navarone can capture and display images very quickly, on the order of four or five images a second. Normally, for multi-grey, it takes about six seconds to capture a full image.

COLOR COMPUTEREYES

This unit comes in a light grey metal box about half the size of an ST disk drive, and it is the only unit with an external power transformer. It also turns out to have the best software of the three—by far the most polished. Color Computereyes will digitize an image in any of the ST's resolutions, either color or monochrome. Plug the unit into the cartridge port, plug in its power supply, plug the video source into the unit, and turn on your ST. Locate and double-click on the

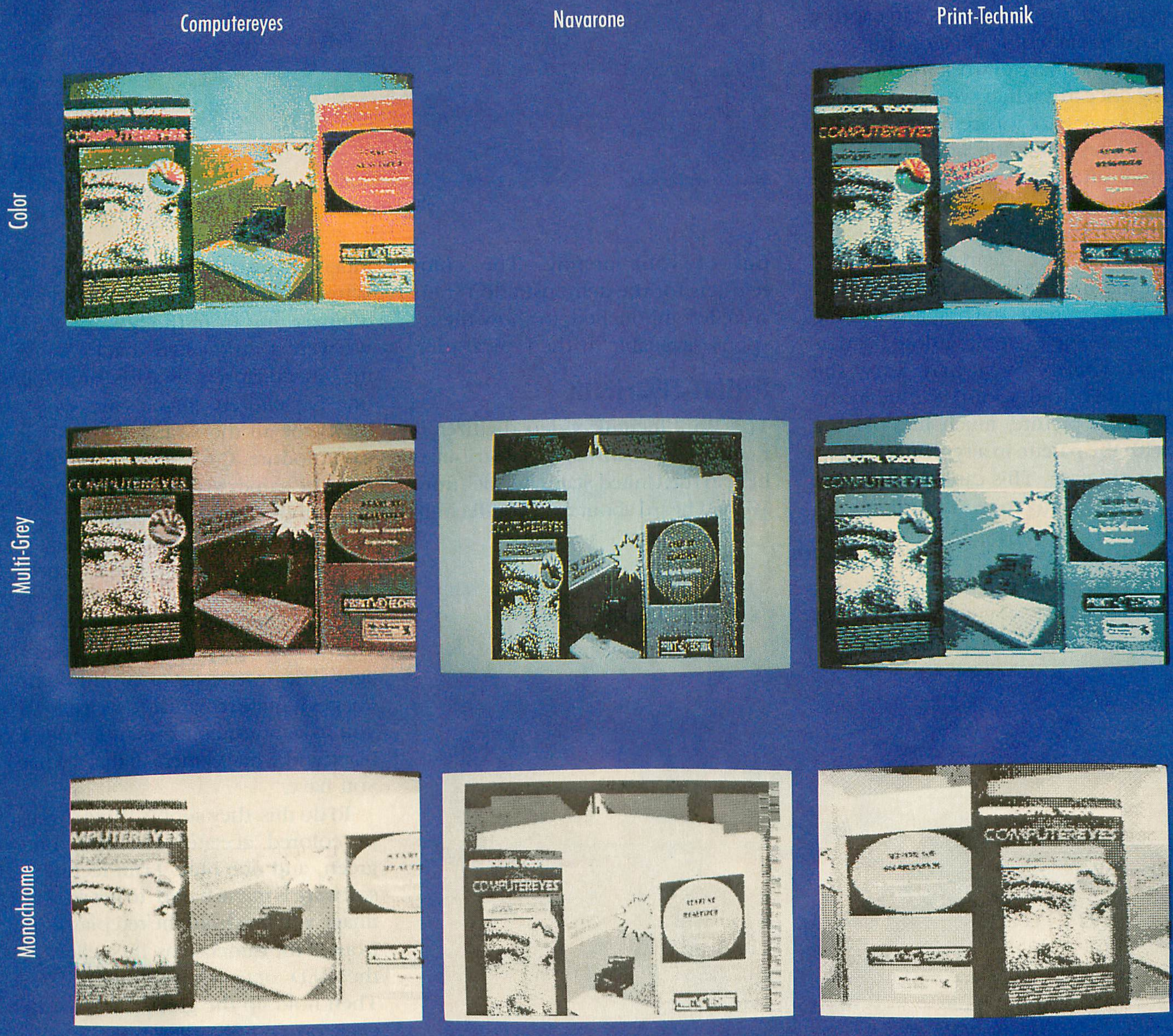
continued on page 44

Prestidigitization

A review of the Color Computereyes, Print-Technik Realtizer and Navarone video digitizers

By Patrick Bass, ST Resource Technical Editor

Figure 1



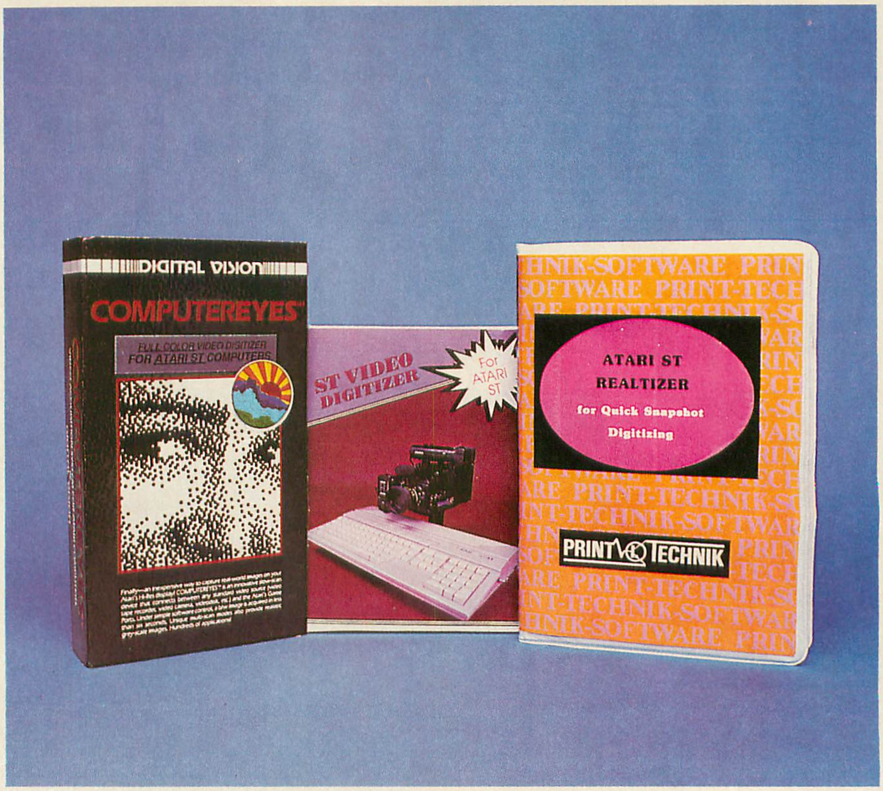


Figure 2

digitizing program, CE.PRG. Like the Navarone, it will automatically synchronize to the incoming video signal, and when it powers up it will present a dialog box onscreen for you to interact with. There are no external knobs or controls.

It's fairly fast, requiring about six seconds for a fast scan or 12 seconds for a slow scan picture. We didn't see much difference between the two. Color Computereyes will digitize an image from a color video source, meaning you can just plug your color video camera in and start digitizing. We found it useful to set the White Balance between each color image we captured. Computereyes can capture respectable color images, but you sometimes have to work for them. Every once in a while, we could capture an image that was remarkable in its color reproduction and clarity, but more often we wound up using the color adjusting controls available in the software.

Both color digitizers offer the means in software to adjust the color palette, contrast, and brightness of the picture. For example, using a slider-type control, you may vary the amount of red, green, or blue in the finished picture, much like playing with the palette in a typical ST drawing program. This can often make a dramatic difference in the final output of your picture. The color registers for the demonstration shots were left untouched, to show the response available to the typical user.

PRINT-TECHNIK

The Print-Technik video digitizer is made in Germany, and is distributed here in the United States by MichTron. We had heard about the Print-Technik video digitizer for months before we actually got one. When we pulled the digitizer unit from the box, though, we were a little taken aback. While the other digitizers are fairly large, this one fits entirely into a case which looks for all the world like a black Commodore C-64 game cartridge. Plug the game cart, er, video digitizer cart into the cart slot on the ST, and turn the ST on. The digitizer is powered completely by the ST. Print-Technik has provided two different programs, depending on whether you wish to take grey scale or color images. The process for obtaining color images is quite remarkable, as it allows you to capture color images from a black and white camera, if that's what you have.

To do this, they supply three sheets of colored acetate—one red, one green, and one blue. Print-Technik's software is menu based; to get a color image you first hold the red plastic in front of the camera lens, then click on the RED option under DIGITIZE. Then hold up the green plastic, and click on GREEN, then hold up the blue plastic and take the blue image. Print-Technik will then take the red, green and blue images, and figure out

Figure 3



where the proper colors should go. It's a somewhat roundabout way, but it works. Well, most of the time. We found with this one, as with Computereyes, sometimes the images popping up were stunning, but for most we had to tweak the colors or contrast around a little bit. Print-Technik, at least, worked best when the images had bright, bold shades of red, green and blue. Neither one of the color digitizers handled yellow very well.

Black and white images were easier to capture, requiring you only to click on the Digitize selection from a drop-down menu. Print-Technik will also digitize images in monochrome. As a matter of fact, some of the monochrome pictures are as good, if not better, than the multi-grey scale images we captured.

CONCLUSIONS

Which video digitizer should you buy? It depends on what you plan to do with it, and how much you want to spend—any of them will capture pictures. For all-around digitizing, we preferred Color Computereyes. It has by far the easiest software to use, and it accepts color video signals directly. It also saves its pictures on disk correctly in DEGAS and NEOchrome format. Its major drawback: it must be externally powered. Print-Technik is very compact, requires no external power, and has the advantage of allowing you to take color images with a black and white camera. It has trouble saving DEGAS-format pictures, though. The Navarone software is much improved over what came with the Hippo digitizer, but it's still has a long way to go before it's really a useful product. The pictures need to be stretched to fill the whole screen—and it's essential to be able to save the pictures in NEOchrome or DEGAS format.

A video digitizer is an interesting toy—but it's a toy that you can make into a useful peripheral for your computer. Even if you're a fine artist who's adept with a mouse, it's still extremely difficult to create a photo-realistic piece of artwork with a standard ST paint program. However, with a good video digitizer, you can grab a real object or scene, then manipulate it with a good paint or drawing program to produce stunning computer artwork.

Now, if you'll just sit still for six seconds. . . ▲

COLOR COMPUTEREYES
Digital Vision
66 Eastern Avenue
Dedham, MA 02026
(617) 329-5400
$249.95

PRINT-TECHNIK REALTIZER
MichTron
576 South Telegraph
Pontiac, MI 48053
(313) 334-5700
$199.95

NAVARONE ST VIDEO DIGITIZER
Navarone Industries
21109 Longway Road, Suite C
Sonora, CA 95370
(209) 533-8349
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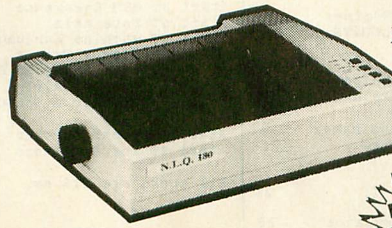
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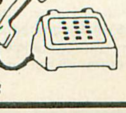
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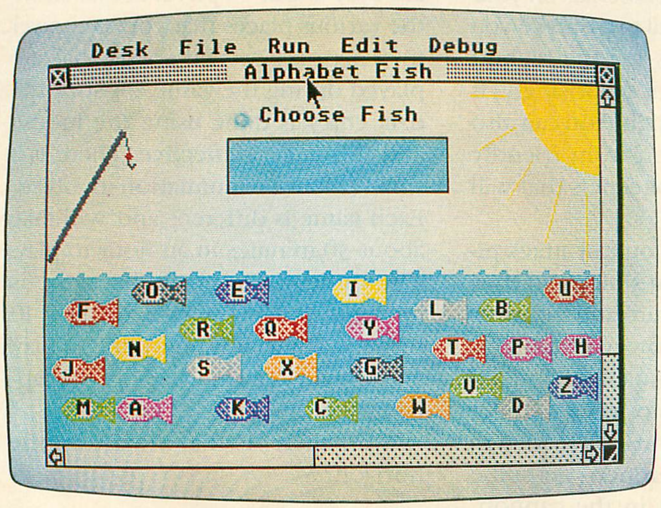
312/382-5050
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Alphabet Fish

An Educational game in GFA and ST BASIC

By Deborah H. Lundgren

Alphabet Fish is a bright, colorful alphabet game for preschool and primary grade-school children. It helps to reinforce letter recognition as children catch the letter fish in alphabetical order.



GO FISH

As you start the game, you must first choose whether you want to play with uppercase or lowercase letters and if you want to use the keyboard or the mouse. Although pressing the correct letter on the keyboard works satisfactorily, the mouse is more effective in this game.

Each letter of the alphabet is represented on the screen by a fish in the sea. Children should search through all the fish to find the one with the correct letter on its side. When they click the correct fish it disappears from the water, reappearing on the end of a fishhook. Using the keyboard weakens the illusion of "catching fish," since they can find the next letter on the keyboard without even searching the water for the correct fish. In either case, when they do catch the correct fish, its letter is entered in a list, and they're prompted to catch the next fish. A wrong answer results in a prompt asking them to try again. When all the fish have been caught, the alphabet song is played, and each letter from A to Z lights up in turn. You may then exit from the program or play again.

TYPING IT IN

Alphabet Fish is written using standard Atari ST BASIC, and includes hints for converting the program over to GFA BASIC. Using ST BASIC, type in the program carefully and save a copy to disk. Next, run TYPO ST and ask it to proofread the copy of the program you just typed in. Compare the TYPO table it generates against the TYPO table printed in the listings section. If any of the values don't match, there may be a typing error in that line. Check it again very carefully.

Those of you with the **Antic** Monthly disk will find a copy of Alphabet Fish on side B, under the name **AFISH.BAS**. Transfer this file to your ST using Linkline,

Your worst day fishing will still be far better than your best day at work.

or some other method. If you need help using Linkline, please consult the HELP file on side B of the monthly disk.

Have fun, and remember the old saying—if you're too busy to fish, you're just too busy. . .

Listing on page 74

ST Product News

ST Reviews

PIRATES OF THE BARBARY COAST

StarSoft Software
TDC Distributors, Inc.
3331 Bartlett Blvd.
Orlando, FL 32811
(305) 423-1987
$24.95

Reviewed by Sol Guber

Every so often there comes a "little" game that's difficult to describe in a short software review. It might not have stunning graphics, or an arcade theme. It also might not be a clone of something successful (remember "Ghosthunter" and "Jawbreaker" back on the old Atari 800s?). **Pirates of the Barbary Coast** is such a program. While it is not something so great that you would rave about it to your friends, you won't take the disk and use it for a Frisbee, either. It's an educational-style game that teaches history from an interesting perspective.

Pirates of the Barbary Coast is a one-person game, set in the 18th century, that allows you to be the captain of a sailing frigate. The object of the game is to earn enough money to ransom off your daughter, who's been kidnapped by the fearsome pirate Bloodthroat. You can also become skilled enough to fight Bloodthroat hand-to-hand and rescue your daughter from his evil clutches.

There are many factors involved in both earning money and learning how to fight. You are shown a map of the Mediterranean with eight destinations. You start out with various supplies and trading materials on your ship and you must sail to a port so you can sell your goods for the highest price. The object (not surprisingly) is to buy low and sell high. You can also purchase information from friendly and unfriendly shopkeepers that will aid in your quest.

As you sail along you can attack pirate ships, and if you sink them they will yield both treasure and information. In this game, however, information can be more valuable than gold doubloons. Your ship has a number of cannons which must be loaded in the old-fashioned manner—get some gunpowder, pour it in the cannon, tamp it down with a push rod, and load a cannon ball. Finally, you have to set your cannon elevation and light the fuse. If you're lucky, the enemy ship will still be in range by the time you finish your operations. A few well-placed shots, and you can send the Queen Anne's Revenge (actually, that was the name of Blackbeard's last ship) down into the briny depths.

You can use money to buy supplies—food for your crew and shot for your cannons—and to repair whatever ship damage you've suffered if your sea battles have left you the worse for wear. You can also use it to procure more goodies for trading purposes.

Overall, this is an enjoyable way to transport yourself back to the days of yore. The graphics are good, but there are only about 16 pictures that show the various places that you can travel to. There are several songs that are played during the game. Most of the data entry is done using the mouse and this is very effective. There is a small amount of animation involved. Each game is different and will take about 30 minutes to an hour to play. The difficulty level of the game is medium and is suitable for ages 10 through adult. It is enjoyable to play and you do learn much about the captaining of a ship.

Avast there! Is that a mast on the horizon?

MOUSE BALL

E. Arthur Brown Company
3404 Pawnee Drive
Alexandria, MN 56308
(612) 762-8847
$29.95

Reviewed by Frank Hayes

The **Mouse Ball** is a trackball that plugs into the mouse port of your ST. It works just like the ST mouse, but once you've used it you'll never think about a mouse in quite the same way

again.

You've probably seen trackballs before, either on a computer or an arcade video game. It works something like a mouse that's been flipped on its back. The mouse has a ball on its underside that rolls along your desk or mousepad; when you move the mouse, the ball turns and tells the ST where the on-screen pointer should be. A trackball doesn't slide across the desk; instead, you turn the ball with your fingers.

There's one obvious advantage to the trackball: You don't need lots of open space on your desk to push a mouse. The Mouse Ball takes up just a 5-by-6-inch spot, and with a cluttered desk, that's a nice feature. There's also a clear disadvantage to a trackball: It's not quite as easy to position the mouse pointer accurately on screen. Even after you've got the feel of it, it's easy to overshoot or undershoot the button or box you want to click on.

But that's not what you really notice with the Mouse Ball. A trackball is *fun*. It's like putting roller skates on your ST. With a mouse, you have to move your hand across your desk to click on "OK." With the Mouse Ball, a flick of your thumb sends the pointer zipping across the screen—then skidding to a stop at "OK," just in time for you to punch the oversized button.

No, it's not as easy to be precise as with a mouse—but it sure livens up a spreadsheet.

The Mouse Ball is a specially modified trackball originally made by Wico. Wico makes the Cadillac of trackballs: The ball is heavy, with a good solid feel, and it turns easily in any direction, so it's extremely responsive.

The Mouse Ball works like a mouse in every way. The buttons are on the upper left-hand corner of the trackball case—the "left" button is much larger than the "right" button, so you can't mistake them. The way the buttons are placed makes it significantly harder to drag the cursor than with a mouse; I sometimes find myself reaching across to use two hands with the trackball for operations that require working the ball and the buttons at the same time. That's the Mouse Ball's biggest drawback, and makes it unsuitable for use with drawing programs. But with almost anything else, the Mouse Ball is just as easy to use as a mouse—and it opens up a whole new side to mouse-based ST games.

I originally got interested in the Mouse Ball when my mouse disappeared—and at $29.95, the Mouse Ball is the least expensive mouse replacement you can buy. But once you've tried it, you may find that you don't want to go back to an ordinary mouse when you can skate around the screen with a trackball.

ATARI ST TRICKS AND TIPS

Abacus Software
P.O. Box 7219
Grand Rapids, MI 49510
(616) 241-5510
$19.95
($14.95 optional disk)

Reviewed by David Plotkin

Atari ST Tricks and Tips imparts enough useful information to be worth the price, although the sample programs and the proofreading leave something to be desired.

The first section of Tricks is about ST BASIC. It primarily gives details of "special" ST BASIC commands and how to use ST BASIC with VDI and AES. It has very good explanations of the WAVE command and some problems of ST BASIC, such as the defective INKEY function. A number of utility programs are also presented, including a clock, and there is a short section about using machine language with BASIC.

The second and third sections present more utilities, including a current time display, a print spooler, a RAMdisk and two color hardcopy programs. These sections consist primarily of assembly source code listings and brief discussions of some underlying principles for each program. You can enter these utilities even if you don't have an assembler, because BASIC loader programs are provided—if you're brave enough to type pages of hexadecimal code.

The fourth section is about GEM programming. The difference between NDC and Raster coordinates is explained. The explanations accompanying the C listings give good insight into using events and messages, although a lot of detail and explanation are left out. The GEM techniques are not explained, so you will need to get this information from another source.

The explanation of building a resource file using the Resource Construction Set is very good. The book walks you through a complete example. Once again, certain fundamental principles are not explained, such as what the different files created by the Resource Construction Set are used for. There is also an example of how to create a desk accessory, and the differences between a desk accessory and a regular application are highlighted.

I have mixed feelings about Tricks. There *is* quite a bit of useful information in this book. Also, some of the included utilities will enhance your ST, especially the RAMdisk and print spooler.

However, this book has problems. The first section on ST BASIC does not explain the "special" commands better than the ST BASIC sourcebook—with the notable exception of the WAVE command. Some of the utilities (such as the clock) and many of BASIC examples don't work on my color system, they seem to be only for a monochrome monitor. No warning is given, so you might expend con-

continued on next page

siderable effort entering these programs for naught.

On top of all that, T&T suffers from excruciatingly bad proofreading. The errors start out right at the front of the book with missing H's in hexadecimal data. It continues with misnamed arrays (intin instead of intout) and includes such things as incomplete translation of C source code from German. The official list of typos and inaccurate information runs three double-spaced pages. There are so many mistakes that it is hard to figure out what they are trying to tell you at times.

On the balance, I would recommend this book strictly for the section on GEM and the utilities which work. You will get your money's worth—and even learn how to spell "mouse" in German.

BOFFIN

Software Punch
38 Ullet Road, Sefton Park
Liverpool L17 3BP England
$99.00

Reviewed by Sol Guber

Americans aren't the only ones writing good software for the ST. From Software Punch in England comes **Boffin**, a unique entry in the word processor market. It combines MacWrite features and some Wordstar commands with the ST's inherent hardware capabilities.

Boffin is a word processor of the "What you see is what you get" type. (WYSIWYG—pronounced "whizi-wig"—one of the newest computer buzzwords.) GEM menu bars at the top of the page allow you to choose among its many options. You can choose between the mouse or the cursor to move easily around your document. Another function making this program unique is its ability to insert pictures into documents, as well as giving you the capability to draw them yourself from within the program.

Boffin has all the standard word processor options. You can load and save files, using the dialog boxes found in GEM. Among the other typical word processing functions are block manipulations, which include moving, copying, pasting and cutting. You can justify lines as well as center specified lines. You can move to a specified line or page of your document. You have the typical search and replace functions. You can also change from an INSERT mode of typing to a REPLACE mode (type over previous characters.)

Boffin supports various printers, but you can also design your own printer drivers easily for use with the text portion of Boffin. The graphics printers supported by this program are only Epson- or Atari-compatible ones. Unless you have a printer the ST supports, you cannot use this program to its fullest advantage.

Among the more unusual abilities of Boffin are those to change to different type styles such as italics, bold and large. You can generate headers and footers as well as set tabs and margins for different portions of the document. Its most unusual (claimed) ability is that of being able to network with other STs. Supposedly, you can link your ST to another ST, and send and receive documents. However, exact details on how to set up the two systems are lacking in the documentation.

The functions which make Boffin truly unusual are in its graphics capability. You can include full-size pictures in your text, or you can go into a graphics window, giving you the ability to draw pictures and graphs from within the program. The graphics are visible on screen along with the text. You can port pictures into your text by using either Doodle or DEGAS/DEGAS Elite in monochrome mode.

When you select the graphics mode on the menu page, a new menu is put on the top of the page. A graphics window opens on the bottom of the screen in which you may perform many more actions, such as writing text in a number of sizes, textual types and directions. You can also draw using the mouse. You can move or copy segments of pictures, draw lines, make circles, boxes and use fills. The program has built-in procedures to produce bar graphs and pie charts. Any of the pictures produced in this graphics mode can be saved and included in your documents.

Boffin is a word processor with a difference. Its ability to include pictures in your text and let you see both the graphics and the text at the same time on your screen could possibly qualify it as an "entry-level" desktop publishing system. The disk is not copy-protected.

TRIVIA CHALLENGE

MichTron
576 S. Telegraph
Pontiac, Michigan 48053
(313) 334-5700
$39.95

Reviewed by Sol Guber

At last there is an ST arcade game you do not need to hide in your closet when relatives come to visit. It takes a quick trigger finger, a steady eye, and a great deal of knowledge. It is MichTron's **Trivia Challenge**, a quiz game to test your knowledge on a variety of subjects.

The object of Trivia Challenge is very simple: to win lots of money. You start out with $10 in quarters, and, Vegas-style, you put part of your funds into a slot machine. Then all you have to do is answer its questions correctly and you win. If you miss two answers, your turn is over. Sound simple? Well. . . it almost is.

Trivia Challenge comes with 4000 different questions divided into five

categories: General Knowledge, Sports, Art, Pop Music, and Science. You can pick any of these subjects for your questions. Click the play button with your mouse, and a question appears on the screen. After about five seconds three answers appear on the bottom of the screen. You're expected to click the mouse on the correct answer. Your score depends on the amount of time it takes you to answer the questions—the faster you answer the higher your score. If it took you one second to answer, you receive 120 points. Twelve seconds will bump you down to only 10 points. Then a new question appears. When you have answered two questions incorrectly, the turn is over and you receive your money. For over 1000 points, you get a dollar, for 1500 points you get $1.50 and so forth.

In addition to the 4000 questions, there is a program on the disk which allows you make up your own questions. All it takes is a simple text editor, such as 1ST Word, to generate the question, the correct answer, and two dummy answers. When you've completed the list, the program will generate the proper file and this new category can be one to choose in future games. This strongly increases the value of the program since it can be used to teach a subject rather than to rely on obscure facts which many might not know, or care about. This ability will allow people to generate their own "expert" file and even trade them. I would like to start the trading, with my file containing information about the operas of Cimerosa. I would like a file containing questions about Madonna's greatest hits. Do I have any takers?

Although Trivia Challenge sounds very simple, it's actually quite addicting. It seems to have spurts where there are lots of easy questions, then when it appears you're getting the upper hand, it will throw difficult questions at you, all in a row. It is a very difficult game to put down (power down?), since you feel the next series will be the one in which you will be a big winner. This is an easy game to recommend since there is nothing similar to it currently available on the ST.

The program comes with a five-page manual which explains very little about the program. The only real use for it is to help you generate your own data files—the play of the game itself is quite obvious. The disk is copy-protected, but personal backups of the files are allowable. This can be used to restore bad files but not to make runnable duplicates.

ST New Products

By GREGG PEARLMAN, **ANTIC** ASSISTANT EDITOR

CHILL, THEN SERVE WITH SILICON CHIPS

FTL's **Micro Cookbook** has hundreds of recipes and a complete cooking database program that can search and retrieve recipes by ingredient, category and more. The program can give suggestions for leftovers or new entrees, and you can add your own recipes. Features include menu planning, portion sizing, calorie control and automatic preparation of shopping lists.

$49.95. FTL, 6160 Lusk Blvd., C-206, San Diego, CA 92121. (619) 453-5711. PRESS.

GRAPHIC ARTIST 1.52

The new version of **Graphic Artist** provides a print queue and includes more printer and plotter drivers, as well as improved driver editors that let you support virtually any dot-matrix printer (including 24-pin printers, but *excluding* color printers printing in multiple colors), laser printers (except Postscript) and plotters. Also, the last mouse coordinates typed are displayed when new coordinates are typed in. Other features include improved pathname syntax checking, printing tips and more precise text margin alignments.

$199.95. Progressive Computer Applications, Inc., 2002 McAuliffe Drive, Rockville, MD 20851. (301) 340-8398. PRESS.

THREE CLASSIC COURSES

The **Famous Course Disk: Volume II** features three of the most difficult courses in the world: Turnberry in Scotland, the Inverness Club in Ohio and Harbour Town in South Carolina, for use with Accolade's Mean 18 golf simulation.

$19.95. Accolade, 20833 Stevens Creek Boulevard, Cupertino, CA 95014. (408) 446-5757. FINAL.

FROM KASPAROV TO SARGON

Chessmaster 2000, with more than 71,000 opening positions, contains the largest opening move library available for a computer chess game. The game provides 12 levels of play, teach and hint modes, and the ability to retract moves—all the way back to the beginning of the game. The Chessmaster 2000 library contains 100 famous games, such as the Kasparov/Karpov championships or even the Chessmaster 2000 vs. Sargon III battle of 1986.

$44.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7171. FINAL.

FOUR FROM MICHTRON

GFA Draft ($99.50), a two-dimensional CAD program, makes it easy to create circuits, scaled drawings and detailed plans. You can have 255 drawing layers (and display up to ten at once) and two styles of variable sized/directioned text, or print or plot in different colors and densities. Other features include Measure, Enlarge, Reduce and Rotate commands.

MichTron's **TRIMbase** ($150) data management system lets you handle large amounts of data, enter names, addresses, personal or business details, and generate custom reports, both as tables and as free text. The program also provides special relational functions for cross-file interactions: condense, break up, merge, subtract and join files.

In **Journey to the Lair**, adapted from the arcade game Dragon's Lair, you'll help Dirk the Daring try to save Princess Daphne. The Dragon's Lair disk is $29.95, as is the video laser cable, but the entire package costs $49.95.

If you think about it, what else could **R.A.I.D.** ($39.95) be but a program debugger? Features include a mini-assembler/disassembler, full screen editing capability, tracer options, copy, fill and move block commands, breakpoints you can reset and two screen displays to keep program and debugging activity isolated.

MichTron, 576 South Telegraph, Pontiac, MI 48053. (313) 334-5700. PRESS.

*New ST product notices are compiled from information provided by the products' manufacturers. **Antic** assumes no responsibility for the accuracy of these notices or the performance of the product. Each mention is followed by a code word indicating that, at press time, **Antic** had seen a FINAL marketable version, near-final BETA, earlier ALPHA, incomplete DEMO, or PRESS release.*

SOFTWARE LIBRARY

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

DOS COMPATIBILITY: All 8-bit programs published by **Antic** are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—*not* with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUP.SYS files.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ

ABCDEFGHIJKLMNOPQRSTUVWXYZ (inverse video)

abcdefghijklmnopqrstuvwxyz

abcdefghijklmnopqrstuvwxyz (inverse video)

0123456789 0123456789 (inverse video)

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL −
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		ESC CTRL =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	人 CTRL ,		CTRL X
	人 CTRL A		CTRL Y
	人 CTRL B		CTRL Z
	人 CTRL C		ESC SHIFT DELETE
	人 CTRL D		ESC SHIFT INSERT
	人 CTRL E		ESC CTRL TAB
	人 CTRL F		ESC SHIFT TAB
	人 CTRL G		人 CTRL .
	人 CTRL H		人 CTRL ;
	人 CTRL I		人 SHIFT =
	人 CTRL J		ESC CTRL 2
	人 CTRL K		ESC CTRL DELETE
	人 CTRL L		ESC CTRL INSERT
	人 CTRL M		
	人 CTRL N		
	人 CTRL O		
	人 CTRL P		
	人 CTRL Q		
	人 CTRL R		
	人 CTRL S		
	人 CTRL T		
	人 CTRL U		
	人 CTRL V		
	人 CTRL W		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key . Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key 人 instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL		STANDARD	
	CTRL F	/	/
	CTRL G	\	SHIFT | +
	CTRL N	_	SHIFT −
	CTRL R	−	−
	CTRL S	+	+

HOW TO USE TYPO ST

TYPO ST is the automatic proofreading program for checking **Antic's** ST BASIC type-in listings. It finds any program line where you made a typing mistake.

Type in TYPO ST and SAVE a copy to disk before you RUN it. Now type RUN in the command window and press the [RETURN] key, or click on RUN from the RUN menu.

TYPO ST first asks for the name of the file to check. Type the desired filename and press [RETURN]. (TYPO ST will proofread itself if you type TYPOST.BAS as the filename.) Next, TYPO ST asks where you want the TYPO table printed. Type [S] [RETURN] for Screen, or [P] [RETURN] for Printer.

TYPO ST now reads your ST BASIC program and prints out a table of four-number codes—and the line number for each code. Compare your printed TYPO ST table with the **Antic** TYPO ST table published at the end of the program you are checking. If any of your four-number codes don't match the magazine's codes, you have made a typing mistake somewhere in that line. Carefully recheck your line against the published version.

Antic uses a word processor to format ST BASIC listings for publication, so we can indent lines and make the program structure more understandable. ST BASIC doesn't allow indentation and will strip off any spaces between the line number and the first BASIC instruction. Therefore, TYPO ST ignores space characters and does not care how far instructions are spaced apart.

TYPO ST cannot determine if two different characters have been switched within a line. For example, PRINT and PRNIT will look the same to TYPO ST. However, ST BASIC itself catches this error and points it out to you.

```
1000  ' TYPO/ST, (c) 1986 Antic Publishing, by Bill Marquardt
1010   DISK=1: OUTPUT=2: TRUE=(-1): FALSE=0: CHECKSUMMING=TRUE
1020   TV=FALSE: PRINTER=FALSE
1030   print "File to Check:": input FILENAME$: print "Output on:"
1040   print "(S)creen or ": print "(P)rinter ": input DEVICE$
1050   if( DEVICE$="p" )or( DEVICE$="P" )then PRINTER=TRUE else TV=TRUE
1060   if TV then print "Checksum for file: ": print FILENAME$: print
1070   if PRINTER then lprint "Checksum for file: ";FILENAME$: lprint
1080   open "I", #DISK, FILENAME$
1090   while CHECKSUMMING
1100      LINENUMBER=0: CHECKSUM=0: gosub GETALINE
1110      DECIMAL=CHECKSUM: gosub DECTOHEX
1120      OUTPUT$=str$( LINENUMBER )+" :"+HI$+LO$
1130      if PRINTER then lprint OUTPUT$ else print OUTPUT$
1140   wend
1150   close DISK
1160  end
1170  GETALINE:
1180   BLINE$="": on error goto 1150
1190   GOTALINE=FALSE
1200   while not GOTALINE
1210      line input#DISK, BLINE$: if len( BLINE$ )>1 then GOTALINE=TRUE
1220   wend
1230   LINENUMBER=val( BLINE$ )
1240   for CHAR=1 to len( BLINE$ )
1250      OK=TRUE: CHARACTER$=mid$( BLINE$, CHAR, 1 )
1260      if CHARACTER$=" " then OK=FALSE
1270      if OK then CHECKSUM=CHECKSUM+asc( CHARACTER$+chr$( 0 ))
1280   next CHAR
1290  return
1300  DECTOHEX:
1310   DECIMAL=abs( DECIMAL )
1320   HI=int( DECIMAL/256 ): LO=( DECIMAL-( HI*256 ))
1330   HH=int( HI/16 ): HL=( HI-( HH*16 ))
1340   LH=int( LO/16 ): LL=( LO-( LH*16 ))
1350   HI$=chr$( 48+HH-( 7*( HH>9 )))+chr$( 48+HL-( 7*( HL>9 )))
1360   LO$=chr$( 48+LH-( 7*( LH>9 )))+chr$( 48+LL-( 7*( LL>9 )))
1370  return
```

1000 :110B	1060 :13E7	1120 :0A48	1180 :089A	1240 :079B	1300 :0352	1360 :0C29
1010 :0EA2	1070 :140E	1130 :1000	1190 :04C6	1250 :0AEB	1310 :0667	1370 :036B
1020 :071B	1080 :0713	1140 :0274	1200 :0680	1260 :08BB	1320 :0B13	
1030 :12D2	1090 :0661	1150 :0408	1210 :11B9	1270 :0F36	1330 :07E3	
1040 :10E6	1100 :0BBD	1160 :01FF	1220 :0273	1280 :03A8	1340 :0804	
1050 :11A2	1110 :09F0	1170 :034C	1230 :0716	1290 :036C	1350 :0C0E	

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↖":POSITION 11,1:? "TYPO II "

EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↖":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

"the swiftly computing atari dreams nameless beyond your dragonfly."

HAIKU POET

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LISTING 1

Don't type the TYPO II Codes!

```
CY 10 REM HAIKU WRITER
HE 20 REM BY A. BAGGETTA
HA 30 REM (c) 1987, ANTIC PUBLISHING
UU 40 DEBUG=PEEK(53279)<>5
QJ 90 CHSET=(PEEK(106)-8):POKE 106,CHSET:
   GRAPHICS 0:POKE 709,134:POKE 710,134:P
   OKE 712,134
ZS 92 POKE 752,1:POKE 82,0
HD 100 DIM WORD$(40),HAIKU$(600),PHR$(100
   ),NOU1$(30),NOU2$(30),T$(2)
PQ 105 DIM MP1$(40),MP2$(40),MP3$(40),CHA
   NG$(40),SX$(5):OUT=0:MAKEPHS=0
WH 110 SX$="⊠y1◙Q"
MX 120 REM TITLE SCREEN
XQ 130 POSITION 0,0:GOSUB 2291
AH 160 POSITION 9,10:? "JAPANESE HAIKU WR
   ITER":POSITION 9,12:? "    BY A. BAGGE
   TTA"
ES 170 POSITION 0,20:GOSUB 2291
KD 200 REM LOAD CHARACTER SET
JG 205 POKE 756,CHSET
WK 210 CLOSE #1:OPEN #1,4,0,"D:JAPAN.FNT"
   :IO=848:POKE IO+2,7:POKE IO+4,0:POKE I
   O+5,CHSET
ZC 220 POKE IO+8,0:POKE IO+9,4:JNK=USR(AD
   R("hhh⊠LV◙"),16):CLOSE #1:GOSUB 2580
LI 730 REM SET-UP HAIKU SCREEN
AB 740 FOR SND=8 TO 0 STEP -0.5:SOUND 0,3
   0,14,SND:SOUND 1,30,10,SND:FOR DEL=1 T
   O 5:NEXT DEL
EC 745 POKE 709,14-SND:NEXT SND:FOR DEL=1
    TO 1000:JNK=RND(0):NEXT DEL
FI 750 POKE 77,0:COUNTER=COUNTER+1:? "◙
     haiku writer          POEM  ";COUNTER
UQ 760 ? :? :? "   !#$
          ";CHR$(8);CHR$(10);"   *"
PK 770 ? "    %&'                          ";
   CHR$(8);CHR$(7);CHR$(136);CHR$(138)
BS 780 ? "    ()*                       *  ";
   CHR$(136)
XO 790 ? "
      *"

NW 800 POSITION 5,16:? "!#$     !#$     !#$"
VY 810 POSITION 5,17:? "%&'     %&'     %&'"
AU 820 POSITION 5,18:? "()*     ()*     ()*"
SF 830 GOTO 980
SJ 840 REM JAPANESE SONG ROUTINE
```

```
PY 850 SND=INT(RND(0)*5)+1
KM 860 P=ASC(SX$(SND,SND))
MR 920 FOR D=0 TO 4 STEP 0.3:SOUND 0,P,10
,D:SOUND 1,1,8,1:NEXT D
FX 930 SOUND 0,P,10,D:SOUND 1,1,8,1
WZ 940 FOR E=1 TO INT(RND(0)*170):CNSOL=P
EEK(53279):NEXT E
DF 950 SOUND 1,0,0,0:SOUND 0,0,0,0:REM RE
MOVE REM FOR DELAY BETWEEN NOTES AB=1^
1
ZR 960 RETURN
UU 970 REM OPTION FOR THREE PHRASES
XJ 980 MAKEPHS=INT(RND(0)*10)+1:IF MAKEPH
S<>1 THEN 1010
VH 990 GOSUB 2010:GOTO 1280
VT 1000 REM START WITH AN ARTICLE
AD 1010 HAIKU$="":GOSUB 1380
CW 1020 HAIKU$(1,LEN(WORD$))=WORD$:WORD$=
""
FS 1030 REM DECIDE ON ADJ OR NOUN
MN 1040 DECIDE=INT(RND(0)*2)+1
FE 1050 IF DECIDE=1 THEN GOSUB 1540:GOSUB
 1970:GOSUB 1990:WORD$=""
UV 1060 GOSUB 1400:NOU1$=WORD$:GOSUB 1970
:GOSUB 1990:WORD$=""
NK 1070 REM ADD A VERB
UK 1080 GOSUB 1700:GOSUB 1970:GOSUB 1990:
WORD$=""
ZP 1090 REM DECIDE ON ADV OR ADV PHRASE
MD 1100 DECIDE=INT(RND(0)*2)+1
ME 1110 IF DECIDE=1 THEN GOSUB 1810
JT 1120 IF DECIDE<>1 THEN 1140
GT 1130 GOSUB 1970:GOSUB 1990:WORD$=""
FZ 1140 IF INT(RND(0)*2)=2 THEN 1170
YA 1150 GOSUB 2010
HV 1160 GOSUB 1970:HAIKU$(LEN(HAIKU$)+1)=
PHR$
DS 1170 TRAP 750:CT=0:C=4:R=7:RR=0:FOR I=
1 TO LEN(HAIKU$)
WV 1180 CT=CT+1
GI 1190 IF HAIKU$(I,I)=" " THEN X=X+1
WM 1200 IF X=3 THEN ? :X=0:RR=RR+2:CT=0
XY 1210 POSITION C+CT,R+RR:? HAIKU$(I,I);

EZ 1220 NEXT I
UN 1230 ATCH=INT(RND(0)*5)+1:IF ATCH=1 TH
EN POSITION C+CT+1,R+RR:? ".":GOTO 127
0
NF 1240 IF HAIKU$(LEN(HAIKU$),LEN(HAIKU$)
)="S" THEN POSITION C+CT+1,R+RR:? "ES.
":GOTO 1270
WF 1245 IF HAIKU$(LEN(HAIKU$),LEN(HAIKU$)
)="H" THEN POSITION C+CT+1,R+RR:? "ES.
":GOTO 1270
GE 1250 IF HAIKU$(LEN(HAIKU$),LEN(HAIKU$)
)="Y" THEN POSITION C+CT,R+RR:? "IES."
:GOTO 1270
XX 1260 POSITION C+CT+1,R+RR:? "S."
RG 1270 POSITION 25,17:? "-- retu PMOC"
GT 1280 POKE 764,255
AJ 1290 CNSOL=7:GOSUB 850:OUT=OUT+1
PE 1300 IF OUT=30 THEN 1340
MK 1310 IF CNSOL=6 THEN SOUND 0,0,0,0:SOU
ND 1,0,0,0:GOSUB 2150
IK 1320 IF CNSOL=5 THEN 2310
BS 1330 IF PEEK(764)=255 THEN 1290
EI 1340 HAIKU$="":PHR$="":OUT=0:GOTO 750
DN 1350 REM ===========================
WD 1360 REM ARTICLES OR POSS PRONOUNS
XE 1370 DATA THE,MY,HIS,HER,OUR,ITS,YOUR
IO 1380 ART=INT(RND(0)*7)+1:RESTORE 1370:
VAR=ART:GOSUB 1950:RETURN
YO 1390 REM NOUNS
EL 1400 DATA FRIEND,HAPPINESS,NIGHT,SUMME
R,SUNSET,CHERRY TREE,BLOSSOM,BUD,PROSP
ERITY,SNOW,WINTER,FALL,SPRING,HOPE
SU 1410 DATA POND,CROW,BALANCE,AUTUMN,SWA
N,SAND,TEMPLE,GARDEN,PETAL,WILLOW,ISLA
ND,TEACHER,TWILIGHT,NOCTURNE
WR 1420 DATA VILLAGE,BELL,MOUNTAIN,SEASHO
RE,DEWDROP,SHELL,CLOVER,BUSH,FLOWER
HF 1430 DATA MOGAMI RIVER,BUTTERFLY,TOMB,
LOCUST,HERON
VX 1440 DATA GOD,VASE,SKY,SURF,TWIG,POEM,
HONEYSUCKLE,OCEAN,MEADOW,
AB 1450 DATA STRANGER,HUT,ROAD,DRAGONFLY,
WEED
BQ 1460 NOUN=INT(RND(0)*14)+1
VL 1470 BANK=INT(RND(0)*4)+1
OT 1480 IF BANK=1 THEN RESTORE 1400:GOTO
1520
QP 1490 IF BANK=2 THEN RESTORE 1410:GOTO
1520
RJ 1500 IF BANK=3 THEN RESTORE 1420:GOTO
1520
LZ 1510 RESTORE 1440
SS 1520 VAR=NOUN:GOSUB 1950:RETURN
UF 1530 REM ADJECTIVES
HB 1540 DATA HAPPY,SAD,LONELY,TIRED,QUIET
,JOYOUS,TROUBLED,SLEEPING,FEARFUL,RUST
Y,ANCIENT,SWEEPING,BURIED,WEEPING
QV 1550 DATA WEAKEST
AF 1560 DATA OLD,WITHERED,GRAY,WILD,DRIFT
ING,PULSING,MILK-WHITE,DRUNKEN,BUNGLIN
G,SIFTED,IMMORTAL,FRIENDLY,NAMELESS
XV 1570 DATA FRESHEST,HAPPIEST,QUIETEST,S
WEETEST,FRIENDLIEST,NOISIEST,FRESHER,H
APPIER,QUIETER,SWEETER,FRIENDLIER
AZ 1580 DATA NOISIER,HUMBLER,HUMBLEST,PRE
TTIER
IP 1590 DATA COLD,SAUCY
GI 1600 ADJ=INT(RND(0)*15)+1
UB 1610 BANK=INT(RND(0)*3)+1
AK 1620 IF BANK=1 THEN RESTORE 1540:GOTO
1650
DL 1630 IF BANK=2 THEN RESTORE 1560:GOTO
1650
OV 1640 RESTORE 1570
GX 1650 VAR=ADJ:GOSUB 1950
ZS 1660 SUP=INT(RND(0)*5):IF SUP<>1 AND B
ANK>1 THEN 1680
EN 1670 CHANG$=WORD$:WORD$="MOST ":WORD$(
6)=CHANG$
BJ 1680 RETURN
QG 1690 REM VERBS
ER 1700 DATA WALKS,SLEEPS,FLIES,HOPES,CRI
ES,CROSSES,TREMBLES,AWAKENS,CALLS,DREA
MS,CARRIES,MOVES,ANSWERS,FOLLOWS,SAW
BU 1710 DATA IS,WAS,CAN BE,WILL BE,SHALL
BE
SV 1720 DATA BALANCED,TAUNTED,REVERBERATE
D,BLOOMED,LOOMED,ECHOED,DISSOLVED,BATH
ED,FUSED,WALKED,SLEPT,HOPED,CRIED
XN 1730 DATA WOULD BE,MUST BE,MIGHT BE,CO
ULD HAVE BEEN,SHOULD HAVE BEEN
MF 1740 DATA CROSSED,MOVED
TD 1750 VERB=INT(RND(0)*20)+1
TW 1760 BANK=INT(RND(0)*2)+1
GL 1770 IF BANK=1 THEN RESTORE 1700:GOTO
1790
NL 1780 RESTORE 1720
LD 1790 VAR=VERB:GOSUB 1950:RETURN
UV 1800 REM ADVERBS
ZH 1810 DATA QUICKLY,SWEETLY,SMOOTHLY,ROU
GHLY,CHILDISHLY,FINALLY,FREQUENTLY,NOW
,SELDOM,RARELY,ONCE,PRESENTLY,FIRST
JP 1820 ADV=INT(RND(0)*13)+1:RESTORE 1810

BZ 1830 VAR=ADV:GOSUB 1950:RETURN
KX 1840 REM PREPOSITIONS
RN 1850 DATA BY,WITH,FOR,ON,AFTER,BEFORE,
AROUND,WITHOUT,BETWEEN,AMONG,UPON,IN,T
O,INTO,OFF
NL 1860 DATA ABOARD,ABOUT,ABOVE,ACROSS,AG
AINST,ALONG,AMID,AT,BEHIND,BELOW,BENEA
TH,BESIDE,BEYOND,CONCERNING,UNTIL
CL 1870 DATA DOWN,DURING,BY,FROM,INSIDE,L
IKE,NEAR,OF,ONTO,OUTSIDE,OVER,PAST,SIN
CE,THROUGH,WITHIN
AC 1880 PREP=INT(RND(0)*15)+1
VD 1890 BANK=INT(RND(0)*3)+1
GN 1900 IF BANK=1 THEN RESTORE 1850:GOTO
1930
IJ 1910 IF BANK=2 THEN RESTORE 1860:GOTO
1930
QO 1920 RESTORE 1870
OU 1930 VAR=PREP:GOSUB 1950:RETURN
AN 1940 REM CHOICE LOOP
ZT 1950 FOR CHOICE=1 TO VAR:READ WORD$:NE
XT CHOICE:RETURN
GD 1960 REM PUT SPACE IN STRING
DN 1970 HAIKU$(LEN(HAIKU$)+1)=" ":RETURN
YL 1980 REM HAIKU$ PART = WORD$
XK 1990 HAIKU$(LEN(HAIKU$)+1)=WORD$:RETUR
N
JK 2000 REM CONSTRUCT PHRASE
XX 2010 PHR$=""
GI 2020 GOSUB 1850:PHR$=WORD$:WORD$=""
EK 2030 GOSUB 1370:PHR$(LEN(PHR$)+1)=" ":
PHR$(LEN(PHR$)+1)=WORD$:WORD$=""
YW 2040 GOSUB 1400
XJ 2050 IF WORD$=NOU1$ OR WORD$=NOU2$ THE
N 2040
SW 2060 NOU2$=WORD$:PHR$(LEN(PHR$)+1)=" "
:PHR$(LEN(PHR$)+1)=WORD$:WORD$=""
NM 2070 IF MAKEPHS<>1 THEN RETURN
ZY 2080 MP=MP+1
YT 2090 IF MP=1 THEN MP1$=PHR$:GOTO 2010
ZB 2100 IF MP=2 THEN MP2$=PHR$:GOTO 2010
```

continued on next page

```
AL 2110 IF MP=3 THEN MP3$=PHR$:GOTO 2010
QU 2120 POSITION 5,7:? MP1$;",":POSITION
   5,9:? MP2$;",":POSITION 5,11:? MP3$;".
   ":MP=0
PJ 2130 POSITION 25,17:? "-- retu Pmoc":R
   ETURN
KH 2140 REM PRINT POEM
SI 2150 CLOSE #2:OPEN #2,8,0,"P:"
KN 2160 IF MAKEPHS=1 THEN 2250
CT 2170 CT=0:X=0
KY 2180 FOR I=1 TO LEN(HAIKU$)
WZ 2190 CT=CT+1
FK 2200 IF HAIKU$(I,I)=" " THEN X=X+1
PL 2210 IF X=3 THEN ? #2:X=0:CT=0
DX 2220 IF I=1 THEN ? #2;" ";
JS 2230 ? #2;HAIKU$(I,I);
RB 2240 NEXT I:GOTO 2280
ET 2250 ? #2;MP1$
FJ 2260 ? #2;MP2$
FZ 2270 ? #2;MP3$
OD 2280 ? #2:? #2;"           --Retu Pmoc"
IU 2290 ? #2:? #2:CLOSE #2:GOSUB 2580:RET
   URN
QR 2291 FOR XQ=1 TO 8:? " !#$ ";:NEXT XQ
AK 2292 FOR XQ=1 TO 8:? " %&' ";:NEXT XQ
CN 2293 FOR XQ=1 TO 8:? " ()* ";:NEXT XQ:
   RETURN
OL 2300 REM CLOSING SCREEN 'SAYANARA'
IM 2310 ? CHR$(125):? :? :? "
    RETU PMOC":? :? "                BIDS Y
   OU":? :?
QB 2315 POKE 675,0:POKE 676,17:POKE 677,1
   13:REM "▶" IS [CTRL]+[TAB]
EG 2320 ? "▶▶▀▀▀▀▀▀▀":? "▶      ◢■■■■■■■◣":? "
   ▶  ◢◢■◢■■■◣■◣◣":? "▶ ◢◢■■■■■■■■■◣◣"
VP 2370 REM ( INVERSE CTRL-M = "▀" )
IB 2380 ? "▶ ◆◆◆◆◆◆◆◆◆◆◆◆◆◆":? "▶ ▀▀▀▀▀▀▀▀▀▀
   ▀▀▀":? "▶▯■■■▀◣■■■■◢▀■■■■▯":? "▶ ◣■■■●■■■■●
   ■■■◢"
NN 2460 ? "▶  ◣■■■  ■■■◢":? "▶   ◣■◢■■■◣■◢
   ":? "▶▶◢ ▄▄ ◣":? "▶▶ ◣■■◢"
TB 2500 ? :? :? "                SAYANARA"
KE 2510 FOR SOUND=0 TO 15 STEP 0.2
QB 2520 SOUND 0,1+SOUND/2,8,SOUND
NU 2530 NEXT SOUND
NF 2540 FOR SOUND=15 TO 0 STEP -0.1
DR 2550 SOUND 0,20+SOUND,8,SOUND:SOUND 1,
   255,10,SOUND+2
OD 2560 NEXT SOUND
QW 2570 POKE 675,1:POKE 676,1:POKE 677,1:
   END
JX 2580 IF DEBUG THEN POKE 16,112:POKE 53
   774,112
BL 2590 RETURN
```

LISTING 2

```
CY 10 REM HAIKU WRITER, LISTING TWO
HE 20 REM BY A. BAGGETTA
HA 30 REM (c) 1987, ANTIC PUBLISHING
BP 35 REM THIS PROGRAM CREATES THE CHARAC
   TER SET FOR THE HAIKU WRITER
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
GP 70 FN$="D:JAPAN.FNT":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")    "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "◙TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "◙TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "▌COMPLETED▐
   "
GK 1000 DATA 1024
HS 1010 DATA 0000000000000000000000000000
   00000000000030040150001021021020000000
   000000000000000245095212
QM 1020 DATA 2390000000000000192096248212
   02702304623909017609600018722123920521
   6240224192058220114186008000
FU 1030 DATA 0000030010010010030070080482
   24128129142216224000000000000122080320
   00000000000000000024024126024
ZX 1040 DATA 0240000000000000000000000240
   24048000000000126000000000000000000000
   000000024024000000006012024
WI 1050 DATA 0480960640000000124226230234
   24222612400005612005605605605625400012
   4130004024032254254000254142
TT 1060 DATA 0140620141422540000280600921
   56254028028000254224224252014142124000
   124226224252226226124000254
GW 1070 DATA 2540040080160320640001242262
   26124226226124000124230230126012024032
   000000024024000024024000000
AO 1080 DATA 0000240240000240240480060120
   24048024012006000000000126000000126000
   000096048024012024048096000
VG 1090 DATA 0000601020120240000240000000
   60102110110096062000016040164098114105
   101193028034098108102099099
SA 1100 DATA 0620300510970960961121210621
   24102097097113113114124127071096092076
   096126079127071096126078064
FD 1110 DATA 0640640300790650961031151250
   56036035035115111099098036120060028012
   012004004004124014006003001
UX 1120 DATA 1130970620481020761200800761
   10038032032064064064096115062034117105
   091083071103103055051107105
SR 1130 DATA 1011010990350600780710990991
   13121062062099071070120064096120062121
   115099103079062003062113097
RR 1140 DATA 1181041081020390310350970240
   70097121062001126080024024028014014099
   066099115115123063062103067
EM 1150 DATA 0671021020520520281020670830
   73105107043020071102044056024044066129
   111103103035028004008048127
WM 1160 DATA 1151020120491030791270000300
   24024024024030000000064096048024012006
   000000124028028028028028124
KA 1170 DATA 0000080280540990000000000000
   00000000000000025500000005412712706202
   8008000024024024031031024024
GD 1180 DATA 0240030030030030030030030030
   24024024248248000000000024024024248248
   024024024000000000248248024
QO 1190 DATA 0240240030070140280561122241
   92192224112056028014007003001003007015
   031063127255000000000000015
BP 1200 DATA 0150150151281922242402482522
   54255015015015015000000000000240240240
   240000000000000255255000000
ET 1210 DATA 0000000000000000000000000000
   00255255000000000000024024024024000028
   028119119008028000000000000
PP 1220 DATA 0310310240240240000000002552
   55000000000000240240242552550240240240
   00000601261261260600000000000
VI 1230 DATA 0000002552552552551921921921
   92192192192192000000000025525502402402
   4024024024255255000000000240
ID 1240 DATA 2402402402402402402400240240
   24031031000000000120096120096126024030
   000000024060126024024024000
BC 1250 DATA 0000240240241260600240000000
   24048126048024000000000240121260120240
   00000000002406012612606002 4
BJ 1260 DATA 0000000000300062542302540000
   00224224254230230254000000000254226224
   224254000000006006254230230
XG 1270 DATA 2540000000000254230254224254
   00000003005612605605605600000000025423
   0230254006126000224224254230
TR 1280 DATA 2302300000000056000120056056
   06000000002800002802802802825200022422
   4236248236230000000120056056
PB 1290 DATA 0560561240000000002362542542
   18194000000000252230230230230000000000
   00254230230230254000000000254
NO 1300 DATA 2302302542242240000002542302
   30254006006000000254226224224224000000
   000254224254006254000000056
JP 1310 DATA 2540560560560620000000002302
```

```
   3023023025200000000002302302301240560000
   0000019421825412403600000
JR 1320 DATA 0002381240561242300000000002
   3023023012600612400000002540280561122254
   0000000240601261260240600000
XZ 1330 DATA 024024024024024024024024024000001
   2612012411010200600000080240561200560240
   0080000160240280300028024016
IX 1340 DATA 155
```

tweening—computer animation's new tool

POLYMOVE

Article on page 24

LISTING 1

Don't type the TYPO II Codes!

```
DO 10 REM POLYMOVE
LE 20 REM BY ROBERT GEDDINGS
HA 30 REM (c) 1987, ANTIC PUBLISHING
OI 40 GOTO 440
FP 50 REM PLAYBACK
ZY 60 GRAPHICS MODE:POKE 710,0
RV 70 ON SEL GOTO 90,290
XI 80 REM CONTINOUS LOOP
IC 90 CNTR=1
KV 100 FOR COUNTER=1 TO 5:REM # OF TWEEN
   STEPS
EJ 110 IF STRIG(0)<>1 THEN 1300
IB 120 PLOT TEMPX(1,CNTR),TEMPY(1,CNTR):R
   EM STARTING POINT FOR EACH POLYGON
HG 130 FOR LOOP=2 TO 8
CT 140 DRAWTO TEMPX(LOOP,CNTR),TEMPY(LOOP
   ,CNTR):REM FINISH POLYGON
NC 150 NEXT LOOP
ON 160 REM TWEEN PART
HA 170 FOR LOOP=1 TO 8
DK 180 TEMPX(LOOP,CNTR)=TEMPX(LOOP,CNTR)+
   STPSX(LOOP,CNTR):TEMPY(LOOP,CNTR)=TEMP
   Y(LOOP,CNTR)+STPSY(LOOP,CNTR)
NK 190 NEXT LOOP
LF 200 ? #6;"█";
QQ 210 NEXT COUNTER
LR 220 CNTR=CNTR+1:IF CNTR<=NUM THEN 100
UK 230 FOR LOOP=1 TO NUM
UY 240 FOR LOOP2=1 TO 8
GT 250 TEMPX(LOOP2,LOOP)=X(LOOP2,LOOP)
IB 260 TEMPY(LOOP2,LOOP)=Y(LOOP2,LOOP)
TA 270 NEXT LOOP2:NEXT LOOP:GOTO 90
MT 280 REM SINGLE LOOP
XV 290 FOR CNTR=1 TO NUM-1
SI 300 FOR COUNTER=1 TO 5
DM 310 PLOT TEMPX(1,CNTR),TEMPY(1,CNTR)
HA 320 FOR LOOP=2 TO 8:DRAWTO TEMPX(LOOP,
   CNTR),TEMPY(LOOP,CNTR):NEXT LOOP
GU 330 FOR LOOP=1 TO 8
DE 340 TEMPX(LOOP,CNTR)=TEMPX(LOOP,CNTR)+
   STPSX(LOOP,CNTR):TEMPY(LOOP,CNTR)=TEMP
   Y(LOOP,CNTR)+STPSY(LOOP,CNTR)
NE 350 NEXT LOOP
LS 360 ? #6;"█";
SD 370 NEXT COUNTER:NEXT CNTR
CB 380 PLOT X(1,NUM),Y(1,NUM)
FY 390 FOR LAST=2 TO 8
MB 400 DRAWTO X(LAST,NUM),Y(LAST,NUM)
KV 410 NEXT LAST
FA 420 FOR DELAY=1 TO 500:NEXT DELAY
KW 430 GOTO 1300
VF 440 GOSUB 920
EB 450 LOW=0:X1=INT(XTOP/2+0.5):Y1=INT(YT
   OP/2):C=1
WO 460 FLAG=0
RD 470 REM
UK 480 FOR CNTR=1 TO NUM
MF 490 GRAPHICS MODE:POKE 710,0:COLOR C
EK 500 LOCATE X1,Y1,COLOUR:PLOT X1,Y1:XOL
   D=X1:YOLD=Y1
NR 510 IF STRIG(0)<>1 THEN GOSUB 730
EL 520 IF FLAG THEN 610
VR 530 GOSUB 840
ZZ 540 IF  NOT (TX OR TY) THEN 510
CF 550 COLOR COLOUR:PLOT XOLD,YOLD:COLOR
   C
PS 560 X1=X1+TX:IF X1>XTOP THEN X1=XTOP
RZ 570 IF X1<LOW THEN X1=LOW
UR 580 Y1=Y1+TY:IF Y1>YTOP THEN Y1=YTOP
TF 590 IF Y1<LOW THEN Y1=LOW
MZ 600 GOTO 500
TE 610 X1=INT(XTOP/2+0.5):Y1=INT(YTOP/2):
   C=1
BD 620 FLAG=0:COUNTER=0
QS 630 FOR DONE=15 TO 0 STEP -0.15:SOUND
   0,100,10,DONE:NEXT DONE:SOUND 0,0,0,0
MQ 640 NEXT CNTR
JO 650 REM CALC STEPS
DJ 660 FOR CNTR=1 TO NUM:FOR LOOP=1 TO 8
GB 670 WORK=CNTR+1:IF WORK>NUM THEN WORK=
   1
MJ 680 STPSX(LOOP,CNTR)=(X(LOOP,WORK)-X(L
   OOP,CNTR))/5
PB 690 STPSY(LOOP,CNTR)=(Y(LOOP,WORK)-Y(L
   OOP,CNTR))/5
IW 700 NEXT LOOP:NEXT CNTR
MT 710 GOTO 1160
ZZ 720 REM POINT ARRAY LOADER
EB 730 FOR DELAY=15 TO 0 STEP -0.75:SOUND
    0,60,10,DELAY:NEXT DELAY:SOUND 0,0,0,
   0
XK 740 COUNTER=COUNTER+1
DD 750 X(COUNTER,CNTR)=X1:Y(COUNTER,CNTR)
   =Y1
MD 760 TEMPX(COUNTER,CNTR)=X1:TEMPY(COUNT
   ER,CNTR)=Y1
AJ 770 PLOT X(1,CNTR),Y(1,CNTR):IF COUNTE
   R=1 THEN 810
VT 780 FOR TMP=2 TO COUNTER
TO 790 DRAWTO X(TMP,CNTR),Y(TMP,CNTR)
BR 800 NEXT TMP
RM 810 IF COUNTER+1>8 THEN FLAG=1
ZI 820 RETURN
IA 830 REM JOYSTICK ROUTINE
ES 840 A=STICK(0)
KJ 850 TX=(A=5 OR A=6 OR A=7)-(A=9 OR A=1
   0 OR A=11)
DU 860 TY=(A=5 OR A=9 OR A=13)-(A=6 OR A=
   10 OR A=14)
AC 870 IF PEEK(53279)<>6 THEN 900
XB 880 GRAPHICS MODE+16:? "█X = ";XOLD,"Y
    = ";YOLD
IN 890 FOR NN=0 TO 1:NN=(PEEK(53279)<>6):
   NEXT NN:GRAPHICS MODE+32
ZF 900 RETURN
JE 910 REM INIT AND OPENING SCREEN
NB 920 DIM X(8,10),Y(8,10),TEMPX(8,10),TE
   MPY(8,10),TM(8,2)
VV 930 DIM STPSX(8,10),STPSY(8,10)
YV 940 XL=1:TRAP 1490:GRAPHICS 15
HM 950 GRAPHICS 0:POKE 752,1
SN 960 POSITION 14,0:? "┌────────────┐"
TZ 970 POSITION 14,1:? "│ POLYMOVE │"
ZB 980 POSITION 14,2:? "└────────────┘"
VI 990 POSITION 11,4:? "by Robert Gedding
   s"
CZ 1000 ? :? :? :?
LP 1010 ? "Each Polygon that you create s
   hould":? "have 8 points, which you sel
   ect with"
MQ 1020 ? "the joystick."
UU 1030 ? :? "You can have up to 10 polyg
   ons."
```

continued on next page

```
ZB 1040 ? "How many do you want: ";:INPUT
    NUM
IJ 1050 POSITION 2,17:? "Graphics mode? (
   3/5/7/8";
QB 1060 IF XL THEN ? "/15";
FY 1070 ? ")  ◆◆";:INPUT MODE
NG 1080 IF  NOT (MODE=3 OR MODE=5 OR MODE
   =7 OR MODE=8 OR (XL=1 AND MODE=15)) TH
   EN ? "◆◆◆":GOTO 1050
YZ 1090 IF MODE=3 THEN XTOP=39:YTOP=23
LC 1100 IF MODE=5 THEN XTOP=79:YTOP=47
KY 1110 IF MODE=7 THEN XTOP=159:YTOP=95
VY 1120 IF MODE=8 THEN XTOP=319:YTOP=191
FQ 1130 IF MODE=15 THEN XTOP=159:YTOP=191

UL 1140 MODE=MODE+16:RETURN
PG 1150 REM LOOP/SINGLE PLAYBACK
OV 1160 GRAPHICS 0:POKE 752,1
FR 1170 POSITION 16,3:? "┌──────────┐"
SZ 1180 POSITION 16,4:? "│ SELECT │"
MU 1190 POSITION 16,5:? "└──────────┘"
DD 1200 ? :? :? :?
QE 1210 ? "      1) CONTINOUS LOOP"
NP 1220 ?
WB 1230 ? "      2) SINGLE LOOP"
YA 1240 ? :? :?
WJ 1250 ? "Enter Number of selection: ";:
   INPUT SEL
JB 1260 IF SEL=1 THEN POSITION 7,22:? "PR
   ESS BUTTON TO EXIT LOOP"
IH 1270 FOR DELAY=1 TO 400:NEXT DELAY
RX 1280 GOTO 60
SA 1290 REM AGAIN AND IF SO, HOW SO
OH 1300 GRAPHICS 0:POKE 752,1
FD 1310 POSITION 16,3:? "┌──────────┐"
SL 1320 POSITION 16,4:? "│ SELECT │"
MG 1330 POSITION 16,5:? "└──────────┘"
DR 1340 ? :? :? :?
WZ 1350 ? "      1) Do again, Same polygon
   s":?
WG 1360 ? "      2) Do again, Different po
   lygons":?
FF 1370 ? "      3) Quit"
EL 1380 ? :? :? "Enter Number of selectio
   n: ";:INPUT SEL
PK 1390 ON SEL GOTO 1410,1470,1480
OG 1400 GOTO 1300
VO 1410 FOR LOOP=1 TO NUM
QZ 1420 FOR LOOP2=1 TO 8
VQ 1430 TEMPX(LOOP2,LOOP)=X(LOOP2,LOOP):T
   EMPY(LOOP2,LOOP)=Y(LOOP2,LOOP)
YN 1440 NEXT LOOP2
VU 1450 NEXT LOOP
RA 1460 GOTO 1160
NP 1470 RUN
RN 1480 POKE 752,0:END
EQ 1490 XL=0:TRAP 40000:GOTO 950
```

game of the month

DIAMOND DAVE

Article on page 25

LISTING 1

Don't type the TYPO II Codes!

```
BL 2 REM DIAMOND DAVE
HD 4 REM BY STEPHEN STOUT
QH 6 REM (c)1987, ANTIC PUBLISHING
PS 10 GOTO 570
JI 20 POKE 53248,X1:POKE 53249,X2:X1=X1+1
   :X2=X2-1
WV 30 IF X1>210 THEN X1=32
RB 40 IF X2<32 THEN X2=210
SW 50 IF PEEK(53252)<>0 AND PEEK(53252)<>
   2 THEN 210
UW 60 IF PEEK(53253)<>0 AND PEEK(53253)<>
   2 THEN 210
IH 70 POKE 77,0:ST=STICK(0):IX=(ST=7)-(ST
   =11):IY=(ST=13)-(ST=14)
TQ 80 IF STRIG(0)=0 THEN 180
FB 90 IF IX=0 AND IY=0 THEN 20
IZ 100 IF X+IX<0 OR X+IX>19 OR Y+IY<1 OR
   Y=IY>22 THEN 20
RW 110 LOCATE X+IX,Y+IY,Z:IF Z<>32 AND Z<
   >163 AND Z<>5 THEN 20
EZ 120 POSITION X,Y:? #6;"◆":X=X+IX:Y=Y+I
   Y:POSITION X,Y:? #6;"!":SOUND 0,0,0,15
   :SOUND 0,0,0,0
HU 130 IF Z<>5 THEN 20
ON 140 DMN=DMN+1:POSITION 0+DMN-1,0:? #6;
   "%":D=X+1+(Y-1)*20:S2$(D,D)="◆"
IP 150 FOR I=250 TO 10 STEP -10:SOUND 0,I
   ,10,8:NEXT I:SOUND 0,0,0,0
HK 160 IF DMN=5 THEN FOR I=1 TO 300:NEXT
   I:GOTO 270
QA 170 GOTO 20
MS 180 ML=USR(ADR(MOVE$),ADR(S2$),PEEK(88
   )+PEEK(89)*256+20,460)
NC 190 POKE 53278,0:X=9:Y=1
AG 200 FOR I=10 TO 250 STEP 10:SOUND 0,I,
   10,8:NEXT I:SOUND 0,0,0,0:GOTO 20
BO 210 LIVES=LIVES-1:POSITION 19-LIVES,0:
   ? #6;" "
ZL 220 X=9:Y=1
GV 230 FOR I=15 TO 0 STEP -1:SOUND 0,0,0,
   I:FOR D=1 TO 15:NEXT D:POKE 710,PEEK(2
   0):NEXT I:POKE 710,148
PG 240 IF LIVES=0 THEN 480
FK 250 ML=USR(ADR(MOVE$),ADR(S2$),PEEK(88
   )+PEEK(89)*256+20,460):POKE 53278,0
PZ 260 GOTO 20
HU 270 IF LEVEL=11 THEN 480
QQ 280 POKE 53248,0:POKE 53249,0:POKE 559
   ,0
BN 290 LEVEL=LEVEL+1:POSITION 13,0:? #6;C
   HR$(ASC(STR$(LEVEL))+128):POSITION 0,0
   :? #6;"          "
KO 300 IF LEVEL=10 THEN POSITION 12,0:? #
   6;"10"
MW 310 IF LEVEL=11 THEN POSITION 12,0:? #
   6;"11"
LG 320 ML=USR(ADR(MOVE$),ADR(S1$),PEEK(88
   )+PEEK(89)*256+20,460)
WF 330 FOR Y=3 TO 21:X=INT(RND(0)*8)+1:PO
   SITION X,Y:? #6;" "
GD 340 X=INT(RND(0)*8)+11:POSITION X,Y:?
   #6;" ":NEXT Y
NZ 350 FOR I=1 TO 5
BW 360 X=INT(RND(0)*18)+1:Y=INT(RND(0)*20
   )+2:LOCATE X,Y,D:IF D<>32 THEN 360
HZ 370 POSITION X,Y:? #6;"◆"
GJ 380 NEXT I
RR 390 ML=USR(ADR(MOVE$),PEEK(88)+PEEK(89
   )*256+20,ADR(S2$),460)
FR 400 X1=32:X2=210
FS 410 D=INT(RND(0)*11)+1:IF ROW(D)<>0 TH
   EN 410
RU 420 ROW(D)=1
WT 430 IF INT(LEVEL/2)*2<>LEVEL THEN P0$(
   PY(D))="<◆◆◆◆◆j<":GOTO 450
ZA 440 P1$(PY(D))="<◆◆◆◆◆f<"
EI 450 X=9:Y=1:POKE 53278,0:DMN=0
US 460 POKE 559,58
QD 470 GOTO 20
WE 480 FOR I=10 TO 250 STEP 1:SOUND 0,I,1
   0,8:NEXT I:SOUND 0,0,0,0:POKE 53248,0:
   POKE 53249,0
MX 490 ML=USR(ADR(MOVE$),ADR(S2$),PEEK(88
   )+PEEK(89)*256+20,460)
```

```
FG 500 POSITION 3,9:? #6;"▣▣▣▣▣▣▣▣▣▣▣▣▣▣▣▣"
DN 510 IF LIVES=0 THEN POSITION 3,10:? #6
   ;"▣  YOU LOST  ▣":GOTO 530
RK 520 IF LEVEL=11 THEN POSITION 3,10:? #
   6;"▣  YOU  WON  ▣"
XZ 530 POSITION 3,11:? #6;"▣              ▣
   ":POSITION 3,12:? #6;"▣HIT  TRIGGER▣"
FY 540 POSITION 3,13:? #6;"▣▣▣▣▣▣▣▣▣▣▣▣▣▣▣▣
   "
PZ 550 POKE 77,0:IF STRIG(0)=1 THEN 550
VB 560 RUN
BB 570 GRAPHICS 0:POKE 559,0:POKE 16,64:P
   OKE 53774,64
PC 580 FOR I=53248 TO 53255:POKE I,0:NEXT
    I:FOR I=704 TO 707:POKE I,0:NEXT I
SI 590 CLR :DIM FIL1$(1),FIL2$((INT(ADR(F
   IL1$)/2048)+1)*2048-ADR(FIL1$)-1)
CT 600 DIM BUF$(768),MI$(256),P0$(256),P1
   $(256)
OZ 610 BUF$(1)=CHR$(0):BUF$(768)=CHR$(0):
   BUF$(2)=BUF$:MI$=BUF$:P0$=BUF$:P1$=BUF
   $
KO 620 DIM MOVE$(56):MOVE$="[illegible]"
AC 630 RESTORE 640:FOR I=0 TO 15:READ D:P
   OKE 1664+I,D:NEXT I
AT 640 DATA 104,162,6,160,138,169,7,76,92
   ,228,238,197,2,76,98,228
UJ 650 CHSET=144*256
MC 660 ML=USR(ADR(MOVE$),57344,CHSET,1024
   )
VC 670 RESTORE 710
OJ 680 GOTO 700
FQ 690 FOR I=0 TO 7:READ D:POKE CHSET+A*8
   +I,D:NEXT I
WB 700 READ A:IF A<>-1 THEN GOTO 690
IL 710 DATA 1,56,124,130,146,254,40,68,13
   0
LF 720 DATA 3,255,255,255,255,255,255,255
   ,255
OY 730 DATA 4,223,255,251,127,255,254,223
   ,251
XO 740 DATA 5,146,84,0,124,254,124,56,16
GM 750 DATA -1
AU 760 DIM S1$(460),S2$(460)
SW 770 TRAP 780:S1$(LEN(S1$)+1)="[illegible]":GOTO
   770
JZ 780 S1$(10,10)="H":S2$=S1$
NU 790 DIM ROW(11):FOR I=0 TO 11:ROW(I)=0
   :NEXT I
DS 800 DIM PY(11):PY(0)=0:PY(1)=49:FOR I=
   2 TO 11:PY(I)=PY(I-1)+16:NEXT I
WE 810 GRAPHICS 1+16:POKE 559,0:POKE 16,6
   4:POKE 53774,64
NQ 820 POKE 708,8:POKE 709,196
WN 830 POSITION 3,0:? #6;"antic magazine
   ":POSITION 6,1:? #6;"presents"
HB 840 D=PEEK(560)+PEEK(561)*256+4:POKE D
   +6,7:POKE D+8,7
XJ 850 POSITION 4,5:? #6;"DIAMOND DAVE":P
   OSITION 2,7:? #6;"BY STEPHEN STOUT"
HB 860 POSITION 2,20:? #6;"TRIGGER TO BEG
   IN"
RO 870 POKE 559,34
NU 880 POKE 77,0:IF STRIG(0)=0 THEN 900
SH 890 GOTO 880
WD 900 GRAPHICS 1+16:POKE 559,0:POKE 16,6
   4:POKE 53774,64
VA 910 LEVEL=0:POSITION 6,0:? #6;"LEVEL▣
   ▣"
GM 920 LIVES=5:POSITION 15,0:? #6;"!!!!!"
DB 930 POKE 756,144:POKE 708,8:POKE 711,3
   6:ML=USR(1664)
UP 940 POKE 704,196:POKE 705,68
VC 950 POKE 54279,ADR(BUF$)/256
VW 960 POKE 53277,3
II 970 POKE 623,0
NG 980 POKE 53256,0:POKE 53257,0
PP 990 GOTO 270
```

LISTING 2

```
WE 10 REM DIAMOND DAVE, LISTING TWO
OY 20 REM BY STEPHEN STOUT
FW 30 REM (c) 1985, ANTIC PUBLISHING
QU 35 REM (CREATES LINE 620)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "▣TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "▣TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "▣COMPLETED▣
   "
JT 1000 DATA 83
MB 1010 DATA 054050048032068073077032077
   0790860690360400530540410580770790860690
   36061034104104133002104133
PO 1020 DATA 001104133004104133003104133
   0061041330051600002400161770011450032300
   01208000223000223000320800 2
SS 1030 DATA 230004198000516500520125520 82
   32198000616500620125520822409603415 5
```

---

finding familiar fahrenheit from cryptic celsius and kelvin Article on page 36

TEMPERATURE CONVERTER

LISTING 1

Don't type the TYPO II Codes!

```
QN 1 REM TEMPERATURE CONVERSION
DU 5 REM BY DAVID ZUBAK
QI 7 REM (c)1987, ANTIC PUBLISHING
QT 10 POKE 710,212:CLOSE #1:OPEN #1,4,0,"
   K:":? "▣"
PQ 20 ? :? " TEMPERATURE CONVERSION":? :?
    :? "SELECT ITEM"
KA 30 ? :? "1.FAHRENHEIT TO CELSIUS":? "2
   .CELSIUS TO FAHRENHEIT":? "3.FAHRENHEI
   T TO KELVIN"
IP 40 ? "4.KELVIN TO FAHRENHEIT":? "5.CEL
   SIUS TO KELVIN":? "6.KELVIN TO CELSIUS
   "
```

continued on next page

```
RL 45 REM DISABLE BREAK KEY
GA 46 POKE 16,64:POKE 53774,64
IW 50 GET #1,A:IF A<49 OR A>54 THEN 50
EJ 60 ON A-48 GOSUB 100,200,300,400,500,6
   00
RX 70 GOTO 20
HR 99 REM F-C CONVERSION
UD 100 ? "■ FAHRENHEIT TO CELSIUS"
FW 110 ? :? "INPUT TEMP. F";:INPUT F
BS 130 C=(F-32)/1.8
AD 140 ? :? ;F;" F = ";C;" C"
ZH 150 RETURN
LK 199 REM C-F CONVERSION
PX 200 ? "■ CELSIUS TO FAHRENHEIT"
LM 210 ? :? "INPUT TEMP C";:INPUT C
XU 230 F=(C*1.8)+32
CM 240 ? :? ;C;" C = ";F;" F"
ZI 250 RETURN
OP 299 REM F-K CONVERSION
DV 300 ? "■ FAHRENHEIT TO KELVIN"
RT 310 ? :? "INPUT TEMP F";:INPUT F
RW 330 K=((F-32)/1.8)+273.15
OJ 340 ? :? ;F;" F = ";K;" K"
ZJ 350 RETURN
OG 399 REM K-F CONVERSION
FE 400 ? "■ KELVIN TO FAHRENHEIT"
CE 410 ? :? "INPUT TEMP K";:INPUT K
KE 430 F=((K-273.15)*1.8)+32
KO 440 ? :? ;K;" K = ";F;" F"
ZK 450 RETURN
NQ 499 REM C-K CONVERSION
NW 500 ? "■ CELSIUS TO KELVIN"
LP 510 ? :? "INPUT TEMP C";:INPUT C
CN 530 K=C+273.15
ZV 540 ? :? ;C;" C =";K;" K"
ZL 550 RETURN
NB 599 REM K-C CONVERSION
RZ 600 ? "■ KELVIN TO CELSIUS"
CG 610 ? :? "INPUT TEMP K";:INPUT K
DU 630 C=K-273.15
RO 640 ? :? ;K;"K = ";C;" C"
ZM 650 RETURN
```

animation editor Article on page 17

ATARI ANIMATION: LESSON 3

LISTING 1

```
MD 1000 REM CHAR. SET EDITOR/ANIMATOR
ML 1010 REM BY ROBIN SHERER
OI 1020 REM (c) 1987, ANTIC PUBLISHING
XG 1110 REM (VERSION 1.41)
KF 1150 REM ASSEMBLY CODE
WI 1160 DIM WT$(57):REM TDELAY.OBJ
HM 1170 WT$(1)="hh■■■P■■■■■■■■■■JP■■P■"
GX 1180 WT$(24)="N■■P9■JP9h■■■P■■■■■■■■"
RJ 1190 WT$(46)="JP■■P■N■■P9■"
IA 1200 REM
CD 1210 DIM FM$(54):REM FILMEM.OBJ
QG 1220 FM$(1)="hh■Mh■Lhh■Nh■■■P■■■■N■L"
WV 1230 FM$(24)="■P■■LfMJPPh■@■P■■N■@■P"
UL 1240 FM$(46)="■■L■P■■L■"
IP 1250 REM
CF 1260 DIM MM$(49):REM MOVMEM.OBJ
GR 1270 MM$(1)="hh■0h■Nh■Mh■Lh■■■P■■■1N"
RA 1280 MM$(24)="■L■@■PWf0fMJPnh■1N■L■@"
ZU 1290 MM$(46)="■PW■"
IC 1300 REM
CB 1310 DIM CC$(37):REM CIOCTL.OBJ
LS 1320 CC$(1)="hhh■■■■i■JP■■hh■B■h■E■h"
RI 1330 CC$(24)="■D■h■I■h■H■LV■"
IO 1340 REM
CU 1350 DIM MS$(82):REM MOVSTR.OBJ
OL 1360 MS$(1)="hh■Mh■Lh■0h■N■■■■N■■■■N"
JZ 1370 MS$(24)="■■■■N■■■■N■■,■■Nn■N1L■K"
CI 1380 MS$(46)="P■■■N■■N■■NN■N■JPd,■Nn"
FG 1390 MS$(68)="■N■■N■N■■NI@PF■"
IE 1400 REM
LX 1410 DIM MB$(91):REM MOVBYT.OBJ
FQ 1420 MB$(1)="hh■Mh■Lh■0h■N■■■■■NH@@P"
IB 1430 MB$(24)="y■■■■N■■■■N,■N1L■■N■■■"
ZT 1440 MB$(46)="■N■■,■N■■N8M■N0■■■N,■N"
HK 1450 MB$(68)="■■■NN■NN■NJPan■N■■NI@P"
CU 1460 MB$(90)="H■"
IZ 1470 REM
BX 1480 DIM SF$(118):REM SHIFTY.OBJ
XN 1490 SF$(1)="hhh■h■M■0h■L■N■■P(■N■P■■"
BW 1500 SF$(24)="■PI■■P2■■N1L■PfN■1L■N■"
ZH 1510 SF$(46)="Py1L■N■PFN■N■■■1L■PfL1"
NL 1520 SF$(68)="L■NH@NPW■P■N■■■1L■J■■■"
SF 1530 SF$(90)="i■■LH@■Pp■■■1L■■■■■iH■"
SH 1540 SF$(112)="LH@■Pp■"
IV 1550 REM
KV 1560 DIM PX$(62):REM PAINTX.OBJ
MD 1570 PX$(1)="hh■Mh■Lh■0h■N■■■■1L■NH@"
XC 1580 PX$(24)="■PWJP ■L■i■■L■■■Mi■■M■"
IK 1590 PX$(46)="N■i(■N■■■0i■■0■R■"
II 1600 REM
IJ 1610 DIM SC$(960):REM CHAREDIT.SCN
IR 1620 SC$(1)="QRRRRRRRRRRRRRRRRRRRWRR"
ZT 1630 SC$(24)="RRRRRWRRRRRRRRRRRE■♥■■■"
ZY 1640 SC$(46)="■■■4■2♥♥■5■4■2♥■♥■■■■■"
BA 1650 SC$(68)="♥■♥♥♥■■■5♥♥♥■ZRRRRRRRR"
VR 1660 SC$(90)="RRRRRRRRRRRSRRRWRRRSRR"
UV 1670 SC$(112)="RRRRRRRD♥♥♥♥♥♥♥♥♥♥♥♥♥"
OP 1680 SC$(133)="♥♥♥♥♥♥♥♥♥■♥♥♥♥■♥♥♥♥■♥♥#5"
TA 1690 SC$(154)="23/2♥♥■♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥"
WD 1700 SC$(175)="♥♥♥♥♥♥♥■♥♥♥■♥♥♥♥■!♥!.)-"
JZ 1710 SC$(196)="!4%♥■♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥"
ET 1720 SC$(217)="♥♥♥♥■♥♥♥♥■♥♥♥♥■ ♥ 5),$♥"
AB 1730 SC$(230,230)=CHR$(34)
CI 1740 SC$(232,232)=CHR$(34)
XT 1750 SC$(238)="♥♥■♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥"
IL 1760 SC$(259)="♥♥■♥♥♥♥■♥♥♥♥■#♥#,%!2♥♥♥"
MW 1770 SC$(280)="■♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥"
TV 1780 SC$(301)="ARRRXRRRD'♥'%4♥♥♥♥♥♥■♥"
YM 1790 SC$(322)="♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥■♥"
CM 1800 SC$(343)="♥♥♥♥♥♥♥■)♥).)4♥♥♥♥■♥♥♥"
QS 1810 SC$(364)="♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥■♥"
DO 1820 SC$(385)="♥♥♥♥♥■,♥,/!$♥♥♥♥♥■♥♥♥♥♥"
GE 1830 SC$(406)="♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥■♥♥♥♥♥"
OP 1840 SC$(427)="♥♥■0♥054♥♥♥♥♥■♥♥♥♥♥♥♥♥"
ZM 1850 SC$(448)="♥♥♥♥♥♥♥♥♥♥♥♥♥♥■♥♥♥♥♥♥"
EP 1860 SC$(469)="■3♥3!6%♥♥♥♥♥■♥♥♥♥♥♥♥♥♥♥"
PJ 1870 SC$(490)="♥♥♥♥♥♥♥♥♥♥♥♥■♥♥♥♥♥♥♥♥■1"
LI 1880 SC$(511)="♥15)4♥♥♥♥♥■♥♥♥♥♥♥♥♥♥♥♥♥"
QK 1890 SC$(532)="♥♥♥♥♥♥♥♥♥♥ARRRRRRRXRRR"
AU 1900 SC$(553)="RRRRRRRD♥♥♥♥♥♥♥♥♥♥♥♥♥"
AH 1910 SC$(574)="♥♥♥♥♥♥♥♥■♥♥■■■2■■4■2♥♥"
CV 1920 SC$(595)="3■4♥♥■♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥"
KA 1930 SC$(616)="♥♥♥♥♥ARRRRRRRRRRRRRRR"
TO 1940 SC$(637)="RRRD♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥"
LF 1950 SC$(658)="♥♥♥■♥■■■■■■■■■■■■■■■■"
HK 1960 SC$(679)="■■♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥"
OF 1970 SC$(700)="♥■■■■■■■■■■■■■■■ ! #■"
MA 1980 SC$(718,718)=CHR$(34)
EM 1990 SC$(721)="♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥■"
NZ 2000 SC$(742)="$%&'()*+,-./012345■♥♥"
OV 2010 SC$(763)="♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥■67"
JG 2020 SC$(784)="89:;<=>?@ABCDEFG■♥♥♥♥"
LT 2030 SC$(805)="♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥■HIJK"
GI 2040 SC$(826)="LMNOPQRSTUVWXY■QRRRRR"
LJ 2050 SC$(847)="RRRRRRRRRRRRRDZ[\]^_"
DQ 2060 SC$(868)="■abcdefghijk■■♥♥♥♥♥♥♥"
WR 2070 SC$(889)="♥♥♥♥♥♥♥♥♥♥♥♥♥■lmnopqrs"
MY 2080 SC$(910)="tuvwxyz■■■■ZRRRRRRRRR"
BI 2090 SC$(931)="RRRRRRRRRXRRRRRRRRRRR"
HV 2100 SC$(952)="RRRRRRRC"
```

```
IC 2110 REM
SC 2120 GOTO 2640
BG 2130 REM GET INPUT STRING
ZB 2140 X=1
DX 2150 POSITION 1,22:? D$;M$;:M$=""
IA 2160 GET #1,KEY:? CHR$(KEY);
JS 2170 IF KEY=155 THEN 2210
NY 2180 IF KEY<>126 THEN 2200
IT 2190 IF X>1 THEN X=X-1:GOTO 2160
VJ 2200 M$(X)=CHR$(KEY):X=X+1:GOTO 2160
GU 2210 POKE 702,64:POSITION 1,22:? D$;
AK 2220 RETURN
YX 2230 REM GET FILENAME
DV 2240 IF M$="" THEN M$="Q"
QE 2250 IF M$="Q" THEN POP :GOTO 3170
YV 2260 F$="D:":IF LEN(M$)<3 THEN 2300
ZC 2270 IF M$(2,2)=":" THEN 2290
GA 2280 IF M$(3,3)<>":" THEN 2300
RB 2290 F$=M$:GOTO 2310
TW 2300 F$(3)=M$
MH 2310 FOR I=1 TO LEN(F$)
HP 2320 IF F$(I,I)="." THEN 2350
FF 2330 NEXT I
DD 2340 F$(LEN(F$)+1)=".FNT"
PQ 2350 TRAP 3820:POKE 752,1:? F$;
AY 2360 RETURN
DW 2370 REM PAINT MATRIX
GI 2380 POKE 752,1:POSITION 1,3:?
OQ 2390 X=USR(ADR(PX$),ADR(X$),MA)
ZG 2400 FOR I=0 TO 7
OG 2410 POSITION 10,I+5:? "  ⊞⊞⊞";
GH 2420 IF N=1 THEN ? PEEK(I+CHA)
FH 2430 NEXT I
AU 2440 RETURN
NG 2450 REM CHAR POSITION
LT 2460 IF CH<32 THEN CHR=CH+64
IY 2470 IF CH>31 THEN CHR=CH-32
SA 2480 IF CH>95 THEN CHR=CH
TE 2490 CHA=CA+CHR*8
QP 2500 X=USR(ADR(MB$),CHA,ADR(X$))
MR 2510 POKE SA+22+4*40,CHR
FU 2520 X=USR(ADR(MM$),CHA,PA+542,7)
EM 2530 IF BLD=0 THEN 2610
DA 2540 X=USR(ADR(MM$),BA(1),PA+690,7)
OV 2550 X=USR(ADR(MM$),BA(3),PA+698,7)
GU 2560 X=USR(ADR(MM$),BA(2),PA+818,7)
HM 2570 X=USR(ADR(MM$),BA(4),PA+826,7)
BI 2580 RETURN
ZS 2590 X=USR(ADR(FM$),PA+640,0,255)
UG 2600 BLD=0:POKE 53249,138
NO 2610 X=USR(ADR(MM$),CHA,PA+693,7)
AS 2620 RETURN
CL 2630 REM EQUATES
WF 2640 DIM B$(4),BA(4),C$(26),D$(38)
PZ 2650 DIM F$(20),M$(40),P(26),X$(64)
GL 2660 X$(1)="▶":X$(64)="▶":X$(2)=X$
QM 2670 D$(1)=" ":D$(19)=" ":D$(2)=D$
HL 2680 D$(20)="⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞⊞"
WE 2690 M$="h■⊞⊞N⊞B⊞h⊞E⊞h⊞D⊞h⊞I⊞h⊞H⊞LV⊞"
FZ 2700 C$="-=+*⊞⊞⊞⊞_⊞\^H◪N□ ABCGILPSQ"
YK 2710 TM=PEEK(106)
MZ 2720 PB=TM-4:PA=PB*256
OZ 2730 CB=PB-4:CA=CB*256
YZ 2740 POKE 106,CB-4
SZ 2750 GRAPHICS 0:POKE 559,0
FG 2760 POSITION 1,3:?
JX 2770 DL=PEEK(560)+PEEK(561)*256
HZ 2780 SA=PEEK(DL+4)+PEEK(DL+5)*256
AN 2790 MA=SA+1+5*40
KD 2800 FOR I=1 TO LEN(C$)
FU 2810 IF I<18 THEN B=PA+920
QL 2820 P(I)=B+4:B=B+4
FP 2830 NEXT I
QG 2840 X=USR(ADR(MM$),ADR(SC$),SA,960)
FT 2850 OPEN #1,4,0,"K:"
OC 2860 REM PLRMSL
ZY 2870 POKE 54279,PB:POKE 53277,3
OQ 2880 POKE 623,1
AZ 2890 POKE 53256,0:POKE 53257,1
GH 2900 POKE 53258,1:POKE 53259,3
SR 2910 POKE 704,84:POKE 705,38
RP 2920 POKE 706,38:POKE 707,132
SN 2930 X=USR(ADR(FM$),PA+512,0,512)
KF 2940 POKE 53248,150:POKE 53249,138
WL 2950 POKE 53250,146:POKE 53251,170
PV 2960 GOTO 3020
SH 2970 REM INIT CHARSET
FY 2980 POSITION 1,22:? D$;
NB 2990 ? "INIT (Y/N)? ";:GET #1,KEY
EJ 3000 POSITION 1,22:? D$;
XN 3010 IF KEY<>89 THEN 3160
SI 3020 X=USR(ADR(MM$),224*256,CA,1024)
NQ 3030 FOR I=0 TO 7
RV 3040 POKE CA+I+126*8,255
ZX 3050 POKE CA+I+127*8,84
```

```
XR 3060 IF I=0 THEN POKE CA+127*8,0
WW 3070 IF I=7 THEN POKE CA+7+127*8,0
FP 3080 NEXT I
FR 3090 C1=15:R1=2:CH=ASC("@")
AB 3100 POKE 756,CB:POKE 82,1
YU 3110 POKE 709,10:POKE 710,0
AJ 3120 POKE 559,46
RG 3130 REM PAINT CHARACTER
RK 3140 GOSUB 2460:GOSUB 2380:POKE 752,0
YF 3150 REM USER INPUT
SL 3160 C=1:R=1:CX=1:RX=1
KO 3170 POSITION C,R+4:? "⊞⊞";
EL 3180 GET #1,KEY:POKE 752,0
OI 3190 REM CLR ERR MSG
IE 3200 IF  NOT E THEN 3250
OS 3210 POKE 752,1
ZA 3220 POSITION 1,22:? D$:E=0
KE 3230 POSITION C,R+4:? "⊞⊞";
OM 3240 POKE 752,0
HP 3250 FOR B=1 TO LEN(C$)
FE 3260 IF KEY=ASC(C$(B,B)) THEN 3300
CR 3270 NEXT B
UI 3280 POSITION 1,22:? "⊞ BAD ENTRY "
OL 3290 E=1:GOTO 3170
OY 3300 X=USR(ADR(FM$),P(1),0,40)
VQ 3310 X=USR(ADR(FM$),P(B),255,4)
YR 3320 ON B GOTO 4580,4590,4600,4610
QD 3330 ON B-4 GOTO 4630,4640,4650,4660
PA 3340 ON B-8 GOTO 4550,4550,4550,4550
CY 3350 ON B-12 GOTO 3430,3440,3460,3480
TL 3360 IF B=17 THEN 3500
BL 3370 IF  NOT BLD OR B=26 THEN 3390
NI 3380 IF B<20 OR B>21 THEN GOSUB 2590
HR 3390 ON B-17 GOTO 4240,3560,3520,3860
UZ 3400 ON B-21 GOTO 2980,3690,3860,3750
DF 3410 IF B=26 THEN 4890
ZH 3420 REM HOME CSR
NK 3430 C=1:R=1:CX=C:RX=R:GOTO 3170
SX 3440 C=8:R=8:CX=C:RX=R:GOTO 3170
VU 3450 REM BYTE #'S ON
XK 3460 N=1:GOSUB 2400:GOTO 3170
UK 3470 REM BYTE #'S OFF
XI 3480 N=0:GOSUB 2400:GOTO 3170
BC 3490 REM CSR OFF
PB 3500 POKE 752,1:GOTO 3170
OK 3510 REM CLR MATRIX
GS 3520 X=USR(ADR(FM$),ADR(X$),127,64)
HA 3530 X=USR(ADR(MS$),ADR(X$),CHA)
QU 3540 GOTO 3140
EX 3550 REM BLD
JT 3560 M$="4 CHARACTERS? ":GOSUB 2140
BS 3570 B$=M$:IF M$="Q" THEN 3170
DH 3580 IF LEN(B$)=4 THEN 3600
UE 3590 ? "⊞":GOTO 3560
OV 3600 X=USR(ADR(FM$),PA+690,0,16)
JM 3610 POKE 53249,130:BLD=1
RF 3620 X=USR(ADR(FM$),PA+818,0,16)
VN 3630 FOR I=4 TO 1 STEP -1
PM 3640 CH=ASC(B$(I,I)):GOSUB 2460
FP 3650 BA(I)=CHA
FV 3660 NEXT I
RF 3670 GOTO 3140
YL 3680 REM LOAD FONT
YF 3690 M$="LOAD? "
LS 3700 GOSUB 2140:GOSUB 2240
QX 3710 OPEN #3,4,0,F$:POKE 752,1
AI 3720 X=USR(ADR(CC$),3,7,CA,1008)
WC 3730 GOTO 3790
FA 3740 REM SAVE FONT
EU 3750 M$="SAVE? "
MK 3760 GOSUB 2140:GOSUB 2240
TT 3770 OPEN #3,8,0,F$:POKE 752,1
EE 3780 X=USR(ADR(CC$),3,11,CA,1024)
PA 3790 CLOSE #3
CN 3800 POSITION 1,22:? D$
MQ 3810 POKE 752,1:GOTO 3140
OD 3820 CLOSE #3:POSITION 1,22:? D$;
DQ 3830 ? "⊞ BAD FILENAME "
FX 3840 E=1:POKE 752,0:GOTO 3170
XU 3850 REM GET/PUT CHR
MR 3860 IF  NOT BLD THEN 3940
JE 3870 M$="SELECT ":M$(8)=B$
OQ 3880 M$(12)="? ":GOSUB 2140
ZD 3890 FOR I=1 TO 4
IJ 3900 IF M$=B$(I,I) THEN 3930
FM 3910 NEXT I
WM 3920 ? "⊞":GOTO 3870
ZQ 3930 CH=ASC(M$):GOTO 3140
GU 3940 POSITION C1+20,R1+15:? "⊞⊞";
GX 3950 POSITION C1+20,R1+15:? "⊞⊞";
IA 3960 GET #1,K
TM 3970 CHA=CA+(C1-1+(R1-1)*18)*8
AA 3980 IF K=81 THEN 3170
FR 3990 IF K=42 THEN C1=C1+1
```

continued on next page

```
GH 4000 IF K=43 THEN C1=C1-1
EZ 4010 IF K=45 THEN R1=R1-1
CG 4020 IF K=61 THEN R1=R1+1
FR 4030 IF R1=0 THEN R1=7
EK 4040 IF R1=8 THEN R1=1
IF 4050 IF C1=0 THEN C1=18
KO 4060 IF C1=19 THEN C1=1
HC 4070 IF K<>155 AND K<>82 THEN 3860
DN 4080 CHR=(CHA-CA)/8
JR 4090 IF CHR<64 THEN CH=CHR+32
QQ 4100 IF CHR>63 THEN CH=CHR-64
ML 4110 IF CHR>95 THEN CH=CHR
ZV 4120 IF K<>82 THEN 4170
LI 4130 RA=(224*256)+(C1-1+(R1-1)*18)*8
BZ 4140 X=USR(ADR(MM$),RA,CHA,7)
QM 4150 GOSUB 2500:GOSUB 2380
TF 4160 POKE 752,0:GOTO 3940
OX 4170 IF B<>21 THEN 4200
RH 4180 X=USR(ADR(MB$),CHA,ADR(X$))
RC 4190 GOTO 3140
GM 4200 X=USR(ADR(MS$),ADR(X$),CHA)
QG 4210 GOTO 3140
IJ 4220 REM
PR 4230 REM ANIMATE
YI 4240 D=4:N=0:M$="CHRS? ":GOSUB 2140
HN 4250 IF LEN(M$)<2 THEN 3160
BK 4260 POKE 752,1:? "SLOW  FAST  QUIT"
MK 4270 X=USR(ADR(MB$),CA,ADR(X$))
DV 4280 GOSUB 2380
MX 4290 K=PEEK(764):POKE 764,255
TJ 4300 IF K=255 THEN 4420
YW 4310 IF K<>62 THEN 4350
MF 4320 D=D+4:F=1:IF D>32 THEN D=32
BE 4330 POSITION 1,22:? "SLOW  FAST"
RM 4340 GOTO 4420
EG 4350 IF K<>56 THEN 4390
LW 4360 D=D-4:F=1:IF D<1 THEN D=0
PU 4370 POSITION 1,22:? "SLOW  FAST"
RY 4380 GOTO 4420
ZQ 4390 IF K<>47 THEN 4420
ES 4400 POSITION 1,22:? D$;
QK 4410 GOTO 3140
SF 4420 FOR I=1 TO LEN(M$)
UT 4430 CH=ASC(M$(I,I)):GOSUB 2460
OF 4440 X=USR(ADR(PX$),ADR(X$),MA)
MT 4450 FOR WAIT=1 TO D:NEXT WAIT
FS 4460 NEXT I
CL 4470 IF F=0 THEN 4530
JF 4480 POSITION 1,22:F=0
ZO 4490 IF D=0 THEN ? "SLOW     "
FL 4500 IF D=32 THEN ? "        FAST"
FH 4510 IF D=0 OR D=32 THEN 4530
ZL 4520 ? "SLOW  FAST"
UC 4530 GOTO 4290
OF 4540 REM SHIFT
JN 4550 POKE 752,1:X=USR(ADR(SF$),B,CHA)
NN 4560 GOSUB 2500:GOSUB 2380:GOTO 3170
GB 4570 REM MOVE CSR
JQ 4580 R=R-1:GOTO 4680
JB 4590 R=R+1:GOTO 4680
AS 4600 C=C-1:GOTO 4680
AD 4610 C=C+1:GOTO 4680
NK 4620 REM SET WRITE
RA 4630 R=R-1:W=1:GOTO 4680
QL 4640 R=R+1:W=1:GOTO 4680
JE 4650 C=C-1:W=1:GOTO 4680
ZT 4660 C=C+1:W=1
QA 4670 REM CSR LIMITS
WY 4680 IF R>8 THEN R=1
YS 4690 IF R<1 THEN R=8
GN 4700 IF C>8 THEN C=1
IH 4710 IF C<1 THEN C=8
WQ 4720 IF  NOT W THEN 4830
BX 4730 REM WRITE BIT
YL 4740 P=CX+(RX-1)*8:M$=X$(P,P)
PF 4750 IF M$="◀" THEN M$="▶":GOTO 4770
JD 4760 IF M$="▶" THEN M$="◀"
AG 4770 X$(P,P)=M$:? "▖";M$;"▦";
ZP 4780 REM PRINT IMAGE
QB 4790 POKE 752,1
GY 4800 X=USR(ADR(MS$),ADR(X$),CHA)
NA 4810 GOSUB 2510:POKE 752,0
OA 4820 REM PRINT BYTE #
UQ 4830 IF  NOT N THEN 4860
JA 4840 POSITION 10,RX+4
VT 4850 ? "   ▦▦▦";PEEK(RX-1+CHA)
XP 4860 CX=C:RX=R:W=0
SX 4870 GOTO 3170
SD 4880 REM ALL DONE
TD 4890 IF BLD THEN GOSUB 2590:GOTO 3160
FC 4900 POSITION 1,22:? D$;
RR 4910 ? "QUIT (Y/N)? ";:GET #1,KEY
ZK 4920 IF KEY=89 THEN 4940
GL 4930 POSITION 1,22:? D$:GOTO 3160
OZ 4940 POKE 106,TM:GRAPHICS 0
BG 4950 POKE 53248,0:POKE 53249,0
PS 4960 POKE 53250,0:POKE 53251,0
JE 4970 POKE 82,2:X=USR(ADR("h1▚♥"))
```

LISTING 2

```
ZD 10 REM CHAR. SET EDITOR/ANIMATOR
ZX 20 REM BY ROBIN SHERER
FW 30 REM (c) 1985, ANTIC PUBLISHING
ZG 35 REM (Creates lines 1170-1590 and
         2690-2700 for CHAREDIT.BAS)
CQ 40 REM (LINES 10-220 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "      ANTIC'S GENERIC
   BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")       "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "▖TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CZ 180 IF C<LN+1 THEN ? :? "▖TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
AL 200 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "█COMPLETED█
   "
IK 1000 DATA 1307
PG 1010 DATA 049049055048032087084036040049041061034104104170224000240025169255141255006138160006162255202
HS 1020 DATA 208253136208248034155049049056048032087084036040050052041061034206255006208241170202208231104
NX 1030 DATA 170224000240018141255006160061622550341550490490570480320870840360400052054041061034202208253
BY 1040 DATA 136208248206255006208241096034155049050049048032068073077032070077036040053052041058082069077
OI 1050 DATA 032070073076077069077046079066074155049050050048032070077036040049041061034104104133205104133
BV 1060 DATA 204104104133206104170224000240016160255165206145204034155049050051048032070077036040050052041
OC 1070 DATA 061034136208251145204230205222082401041681920002400141652061361920002400341550490500520480 32
MO 1080 DATA 070077036040052054041061034051145204136208251145204096034155049050054048032068073077032077077
DT 1090 DATA 036040052057041058082069077032077079086077069077046079066074155049050055048032077077036040049
TU 1100 DATA 041061034104104133207104133206104133205104133204104170224000240018160255177206034155049050056
NO 1110 DATA 048032077077036040050052041061034145204136192255208247230207230205202208238104168177206145204
CT 1120 DATA 136192034155049050057048032077077036040052054041061034255208247096034155049051048032068073
AZ 1130 DATA 077032067067036040051055041058082069077032067073079067084076046079066074155049051050048032067
OX 1140 DATA 067036040049041061034104104104170169000024105016202208250170104104157066003104157069003104034
HJ 1150 DATA 155049051051048032067067036040050052041061034157068003104157073003104157072003076086228034155
FO 1160 DATA 049051053048032068073077032077083036040056050041058082069077032
```

```
   07908608308408204607906607 4
UE 1170 DATA 155049051054048032077083036 0
   400490410610341041041332051041332041 04
   1332071041332061690001410 00
XW 1180 DATA 0071690001410010070341550490
   5105504803207708303604000500520410610 34
   169000141002007169128141003
UN 1190 DATA 0071620081720000072380000071
   7720420112603415504905105604803207708 3
   036040005205404106103420800 9
ER 1200 DATA 1730020070130030071410020070
   780030070242022082281720010072380341 55
   049051057048032077083036040
SH 1210 DATA 0540560410610340010071730020
   071452061730000072010642081980960341 55
   049052049048032068073077032
IB 1220 DATA 0770660360400570490410580820
   690770320770790860660890840460790660 74
   155049052050048032077066036
KR 1230 DATA 0400490410610341041041332051
   041332041041332071041332061600001691 27
   145206200192064208034155049
QZ 1240 DATA 0520510480320770660360400500
   520410610342491690001410000071690001 41
   001007172001007177204141002
AX 1250 DATA 0071691281410341550490520520
   480320770660360400520540410610340030 07
   162008172001007173002007056
Q5 1260 DATA 2370030070480101410020071720
   000070341550490520530480320770660360 40
   054056041061034169126145206
CC 1270 DATA 0780030072380000072022082252
   380010071730000072010642080341550490 52
   054048032077066036040057048
CZ 1280 DATA 0410610342000960341550490520
   560480320680730770320830700360400490 49
   056041058082069077032083072
AB 1290 DATA 0730700840890460790660741550
   490520570480320830700360400490410610 34
   104104104170104133205133207
```

```
XK 1300 DATA 1041332041332062240092400402
   2401024000922403415504905304804803208 3
   070036040005005204106103401 1
CE 1310 DATA 2400732240122400500961600071
   7720413320823020613617720414520613603 4
   155049053049048032083070036
VD 1320 DATA 0400520540410610342082491772
   0414520616520819820614520609616000017 7
   204133208230204177034155049
HE 1330 DATA 0530500480320830700360400540
   5604106103420414520620019200720824716 5
   208145206096160000177204024
AR 1340 DATA 0741440030240341550490530510
   4803208307003604005704804106103410512 8
   145204200192008208240096160
ZQ 1350 DATA 0001772040240101440030241050
   0114503415504905305204803208307003604 0
   049049050041061034204200192
EL 1360 DATA 0082082400960341550490530540
   4803206807307703208008803604005405004 1
   058082069077032080065073078
GM 1370 DATA 0840880460790660741550490530
   5504803208008803604004904106103410410 4
   133205104133204104133207104
GM 1380 DATA 1332061620081600001772041452
   0620019203415504905305604803208008803 6
   040005005204106103400820824 7
ZN 1390 DATA 2022400321652040241050081332
   0414400616520510500013320516503415504 9
   053057048032080088036040052
DG 1400 DATA 0540410610342060241050401332
   0614421816520710500013320714421009603 4
   155050054057048032077036061
IZ 1410 DATA 0341041620161690071570660031
   0415706900310415706800310415707300310 4
   157072003076086228034155050
WN 1420 DATA 0550480480320670360610340450
   6104304202802903003109512409209407200 8
   078014032065066067071073076
AE 1430 DATA 080083081034155
```

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ATARI ANIMATION: LESSON 3

LISTING 1

```
VU 1000 REM LINKBAS.BAS
ML 1010 REM BY ROBIN SHERER
OI 1020 REM (c) 1987, ANTIC PUBLISHING
UN 1110 REM VERSION 2.05
GC 1150 DIM A$(40),C$(2048),F$(20)
IX 1160 DIM S$(2048),V$(40)
QR 1170 LN=2000:R=6
EO 1180 CLOSE #3:OPEN #3,4,0,"E:"
LY 1190 POKE 82,1
GJ 1200 ? "━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━"
LA 1210 ? " LINK BASIC "
NV 1220 ? "━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━"
CW 1230 POSITION 1,20
OM 1240 ? "━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━"
QV 1250 ? " Q▮QUIT "
EW 1260 ? "━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━":POKE 82,2
XW 1270 REM GET DESTINATION FILENAME
OH 1280 TRAP 1410
GB 1290 POSITION 21,4
VH 1300 ? "                    "
XJ 1310 POSITION 2,4
WM 1320 ? "LIST (D:TEMP.LST)? ";
UK 1330 INPUT #3;A$:IF A$="Q" THEN 2440
CL 1340 IF LEN(A$)<2 THEN 1370
UU 1350 IF A$(2,2)=":" THEN 1390
VX 1360 IF A$(3,3)=":" THEN 1390
NI 1370 IF LEN(A$)=0 THEN A$="TEMP.LST"
SP 1380 F$="D:"
OZ 1390 F$(LEN(F$)+1)=A$
HF 1400 POSITION 21,4:? F$:GOTO 1440
ND 1410 POSITION 11,21
DS 1420 ? " CANNOT OPEN DESTINATION ";
SD 1430 GOTO 1280
HE 1440 CLOSE #1:OPEN #1,8,0,F$
QZ 1450 REM GET STARTING LINE NUMBER
NS 1460 POSITION 11,21
XL 1470 ? "                              ";
RX 1480 TRAP 1570
GX 1490 POSITION 21,5
PR 1500 ? "          "
YE 1510 POSITION 2,5
IB 1520 ? "START LINE (2000)? ";
UO 1530 INPUT #3;A$:IF A$="Q" THEN 2440
FY 1540 IF A$="" THEN A$="2000"
DW 1550 LN=VAL(A$)
XP 1560 POSITION 21,5:? LN:GOTO 1610
NX 1570 POSITION 11,21
FA 1580 ? " NEED A NUMBER ";
TV 1590 GOTO 1480
DU 1600 REM GET SOURCE FILENAME
NH 1610 POSITION 11,21
AM 1620 ? "                    ";
QV 1630 POKE 752,0:TRAP 1780
ZR 1640 A=0:V=0:R=R+1:IF R>17 THEN R=7
RR 1650 POSITION 2,R
YP 1660 ? "SOURCEFILE/VAR<@>? ";
```

continued on next page

```
FM 1670 POSITION 2,R+1
ST 1680 ? "                         ";
VF 1690 INPUT #3,A$:L=LEN(A$)
HV 1700 IF A$="Q" OR A$="" THEN 2440
PA 1710 IF A$(L,L)="@" THEN A=1
JA 1720 FOR J=1 TO LEN(A$)
HV 1730 IF A$(J,J)="/" THEN 1810
GA 1740 NEXT J
NV 1750 POSITION 11,21
JB 1760 ? " NO /VARIABLE NAME "
SR 1770 GOTO 1640
OE 1780 POSITION 11,21
PH 1790 ? " BAD FILENAME SPEC "
RL 1800 GOTO 1630
AK 1810 POP :V$=A$(J+1,L-A):L=LEN(V$)
ER 1820 V=L+1:V$(V)="$":A$=A$(1,J-1)
GN 1830 IF LEN(A$)<2 THEN 1860
ZE 1840 IF A$(2,2)=":" THEN 1880
AH 1850 IF A$(3,3)=":" THEN 1880
HS 1860 IF LEN(A$)=0 THEN A$="TEMP.OBJ"
SW 1870 F$="D:"
YN 1880 F$(LEN(F$)+1)=A$:L=LEN(F$)
YR 1890 IF F$(L,L)="." THEN F$(L)=".OBJ"
OV 1900 S$="":CF=0
EN 1910 POKE 752,1:POSITION 11,21
WT 1920 ? "                         "
EW 1930 IF A=1 THEN 1970
NW 1940 POSITION 11,21
GH 1950 ? " INSERT SOURCE [KEY]";
DL 1960 GOSUB 2460
FR 1970 CLOSE #2:OPEN #2,4,0,F$
FI 1980 POKE 752,1:POSITION 11,21
WX 1990 ? " READING SOURCE       "
PW 2000 C$(1)=" ":C$(2048)=" ":C$(2)=C$
QF 2010 IF F$(L)<>".OBJ" THEN 2030
NJ 2020 FOR I=1 TO 6:GET #2,X:NEXT I
PE 2030 TRAP 2070
LV 2040 GET #2,BYTE
GI 2050 S$(LEN(S$)+1)=CHR$(BYTE)
IQ 2060 LS=LEN(S$):GOTO 2040
UX 2070 IF A=1 THEN 2110
NR 2080 POSITION 11,21
KF 2090 ? " INSERT DESTINATION [KEY] ";
CE 2100 GOSUB 2460
MY 2110 POSITION 11,21
CT 2120 ? " WRITING TO DESTINATION   "
FK 2130 REM PUT TO DESTINATION FILE
QZ 2140 ? #1;LN;" REM"
VU 2150 LN=LN+10
PF 2160 ? #1;LN;" DIM";V$;"(";LEN(S$);
ID 2170 ? #1;"):REM ";F$(3)
WD 2180 LN=LN+10
XU 2190 P=1
NU 2200 IF P<10000 THEN L=23
PW 2210 IF P<1000 THEN L=24
TS 2220 IF P<100 THEN L=25
ZI 2230 IF P<10 THEN L=26
XQ 2240 L=L-V:IF P+L>LS THEN L=LS-P+1
NL 2250 ? #1;LN;V$;"(";P;")=";CHR$(34);
IK 2260 FOR I=P TO P+L-1
YK 2270 IF S$(I,I)<>CHR$(34) THEN 2290
LO 2280 C$(I,I)="1":S$(I,I)=" ":CF=1
KM 2290 ? #1;S$(I,I);
EW 2300 NEXT I
ZL 2310 ? #1;CHR$(34)
OD 2320 LN=LN+10:P=P+L
UK 2330 IF P<=LS THEN 2200
VF 2340 CLOSE #2:IF CF=0 THEN 2410
XG 2350 FOR I=1 TO LEN(S$)
SX 2360 IF C$(I,I)<>"1" THEN 2400
ZD 2370 ? #1;LN;V$;"(";I;",";I;
NS 2380 ? #1;")=CHR$(34)"
WK 2390 LN=LN+10
VI 2400 NEXT I:CLOSE #1
NE 2410 POSITION 11,21
MQ 2420 ? "                          "
RN 2430 GOTO 1630
UD 2435 REM BRANCH TO DOS
SD 2440 CLOSE #1:X=USR(ADR("hl"))
DR 2450 REM KEYBOARD TEST
GS 2460 POKE 764,255
FC 2470 K=PEEK(764):IF K=255 THEN 2470
CK 2480 POKE 764,255:RETURN
```

sideways printouts made easy

TAPELESS SPREADSHEET PRINTER

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LISTING 1

Don't type the TYPO II Codes!

```
UA 10 REM TAPELESS
MU 12 REM BY ROBERT GRUNBOK
ZH 14 REM (c)1987, ANTIC PUBLISHING INC.
UK 20 TRAP 40000:GOSUB 520:GOSUB 550:GOTO
    150
NB 30 REM LOAD ARRAY
JN 40 TRAP 60:FOR CP=AR TO AW*R-R+AR STEP
    R:GET #DISK,LTR:IF LTR=155 THEN LET C
   P=AW*R-R+AR:RETURN
UZ 50 P$(CP,CP)=CHR$(LTR):NEXT CP:TRAP 40
   000:RETURN
CK 60 TRAP 40000:RETURN :REM TRAP EOF ERR
   OR
GQ 70 REM PRINT
GA 80 TRAP 120:CLOSE #PRNTR:OPEN #PRNTR,O
   UT,ZERO,"P:":IF (FILL=FA) AND (NOWASTE
   >ZERO) THEN AW=NOWASTE
MH 90 BL=INT(80-R)/2:INDEX=1:FOR PR=1 TO
   AW
SW 100 IF BL>ZERO THEN PRINT #PRNTR;BL$(1
   ,BL);
JU 110 PRINT #PRNTR;P$(INDEX,INDEX+R-1):I
   NDEX=INDEX+R:NEXT PR:RETURN
FU 120 IF PEEK(195)=138 THEN 1050
VJ 130 TRAP 40000:PR=AW:RETURN
QC 140 REM MAIN PROGRAM
KI 150 TRAP 210:POKE 752,1:C=ZERO:R=ZERO:
   S=ZERO:W=ZERO:CLOSE #DISK:OPEN #DISK,F
   ROM,ZERO,FILE$:? ""
KK 160 GOSUB 1040:POSITION 13,9:? "SIZING
    ARRAY":POSITION 10,11:? "PLEASE STAND
    BY..."
CH 170 FOR I=1 TO 500:NEXT I:POKE 559,ZER
   O
BA 180 GET #DISK,LTR:W=W+1:IF LTR<>155 TH
   EN 180
CU 190 R=R+1:IF W>=C THEN C=W
WI 200 W=ZERO:GOTO 180
KV 210 CLOSE #DISK:IF PEEK(195)=136 THEN
   TRAP 40000:POKE 559,34
GP 220 IF R>80 THEN ? "Form has too man
   y ROWS to print":? "clearly.":? :? "Se
   e Documentation...":CLOSE #DISK:END
ZA 230 S=R*C:AW=INT(M/R)
EI 240 FILL=C/AW:FA=INT(C/AW):IF FA<FILL
   THEN FA=FA+1
AF 250 IF S<M THEN AW=C
RI 260 GOSUB 1040:POKE 712,192:? "":POSI
   TION 12,9:? "LOADING ARRAY":POSITION 1
   0,11:? "PLEASE STAND BY..."
HC 270 FOR I=1 TO 500:NEXT I:POKE 559,ZER
   O:CLOSE #DISK:OPEN #DISK,FROM,ZERO,FIL
   E$
PP 280 REM FORM FITS
JP 290 IF FA<2 THEN GOSUB 1030:FOR AR=R T
   O 1 STEP -1:GOSUB 40:NEXT AR:GOSUB 80:
   GOTO 420
```

```
RM 300 REM DOESN'T FIT, MULTI-FILL
MZ 310 H=ZERO:T=C-AW:NOWASTE=ZERO
GM 320 FOR FILL=1 TO FA:GOSUB 1030:FOR AR=R TO 1 STEP -1
WJ 330 IF H>ZERO THEN FOR SKIP=1 TO H:GET #DISK,LTR:NEXT SKIP
UD 340 GOSUB 40
PX 350 IF T>ZERO THEN FOR SKIP=1 TO T:GET #DISK,LTR:NEXT SKIP
LV 360 NEXT AR
DE 370 H=H+AW
SS 380 IF FILL=FA-1 THEN NOWASTE=T+1
QP 390 IF T<=AW THEN T=ZERO
CA 400 IF T>AW THEN T=T-AW
OZ 410 GOSUB 80:CLOSE #DISK:OPEN #DISK,FROM,ZERO,FILE$:NEXT FILL
EP 420 PRINT #PRNTR;CHR$(12):REM FORM FEED
CJ 430 POKE 559,34:POKE 752,1:POKE 712,38:POKE 77,0
WK 440 ? "■":POSITION 5,8:? "Choose:":POSITION 7,10:? "Another copy of same form":POSITION 7,12:? "New form"
NA 450 POSITION 7,14:? "Quit":CLOSE #KEYBOARD:OPEN #KEYBOARD,FROM,ZERO,"K:":GOSUB 1010
VU 460 POKE 694,0:POKE 702,64:GET #KEYBOARD,J:IF J=65 THEN GOTO 500
II 470 IF J=78 THEN ? "■":FA=1:GOTO 570
FQ 480 IF J=81 THEN POKE 752,0:END
XK 490 POKE 764,255:GOTO 460
SH 500 IF FA<2 THEN GOSUB 80:? #PRNTR;CHR$(12):CLOSE #PRNTR:GOTO 440
ND 510 GOTO 230
YZ 520 DIM A$(40),X$(40),FILE$(20),BL$(80):BL$(1)=" ":BL$(80)=BL$:BL$(2)=BL$:M=INT(FRE(0)-300):DIM P$(M)
OJ 530 ZERO=0:KEYBOARD=1:DISK=2:SCREEN=3:FROM=4:PRNTR=7:OUT=8
ZJ 540 RETURN
GA 550 REM FILE MENU
HY 560 OPEN #SCREEN,12,ZERO,"S:"
JF 570 POKE 752,1:POKE 709,0:POKE 710,12:POKE 712,40
PW 580 POSITION 4,9:? "Insert data disk into Drive #1":POSITION 10,11:? "Then press RETURN";
YU 590 CLOSE #KEYBOARD:OPEN #KEYBOARD,FROM,ZERO,"K:":GOSUB 1010:GET #KEYBOARD,J:? #SCREEN;"■"
KG 600 POSITION 0,0:? #SCREEN;"┌──────────────────────────────────────┐"
VU 610 POSITION 0,1:? #SCREEN;"| FILES AVAILABLE TO PRINT SIDEWAYS |";
EU 620 POSITION 0,2:? #SCREEN;"| Select with arrows then press RETURN |"
RW 630 POSITION 0,3:? #SCREEN;"├──────────────────────────────────────┤"
QS 640 FOR I=4 TO 19:POSITION 0,I:? #SCREEN;"|";:POSITION 39,I:? #SCREEN;"|";:NEXT I
ZR 650 POSITION 0,20:? #SCREEN;"| Press Esc to see another directory |"
BO 660 POSITION 0,21:? #SCREEN;"└──────────────────────────────────────┘"
DX 670 CLOSE #DISK:OPEN #DISK,6,ZERO,"D:*.*":R=4:C=1
RF 680 TRAP 770:INPUT #DISK,A$:TRAP 40000
JP 690 IF A$(3,13)="DOS     SYS" THEN 720
ST 700 IF A$(5,8)="FREE" THEN 770
CN 710 IF A$(11,13)<>"TXT" AND A$(11,13)<>"   " THEN 680
IM 720 X$=A$(3,10):X$(9,9)=".":X$(10,12)=A$(11,13)
BF 730 FOR I=2 TO 12:IF X$(I,I)=" " THEN X$(I,I)="."
VP 740 NEXT I:POSITION C,R
RB 750 ? #SCREEN;X$(1,12);:C=C+13:IF C=40 THEN C=1:R=R+1:IF R=22 THEN 770
RG 760 GOTO 680
VD 770 R=4:C=1:N=128:GOSUB 910:POKE 764,25
5
KU 780 CLOSE #KEYBOARD:OPEN #KEYBOARD,FROM,ZERO,"K:"
LC 790 POKE 694,0:POKE 702,64:GET #KEYBOARD,J:X=0:Y=0
NV 800 IF J=45 THEN Y=-1:GOTO 860
GX 810 IF J=61 THEN Y=1:GOTO 860
ZE 820 IF J=43 THEN X=-13:GOTO 860
QU 830 IF J=42 THEN X=13:GOTO 860
II 840 IF J=155 THEN 920
TR 850 IF J=27 THEN POKE 764,255:? #SCREEN;"■":GOTO 580
US 860 POKE 764,255:IF X=0 AND Y=0 THEN 790
ZL 870 IF C+X<1 OR C+X>39 THEN 790
OV 880 IF R+Y<4 OR R+Y>19 THEN 790
EX 890 POSITION C+X,R+Y:GET #SCREEN,J:IF J=32 THEN 790
AE 900 N=-128:GOSUB 910:N=128:C=C+X:R=R+Y:GOSUB 910:GOTO 790
ZK 910 POSITION C,R:FOR I=C TO C+11:GET #SCREEN,J:J=J+N:POSITION I,R:PUT #SCREEN,J:NEXT I:RETURN
UU 920 POSITION C,R:FOR I=1 TO 12:GET #SCREEN,J:A$(I,I)=CHR$(J-128):NEXT I
VX 930 X$(1,2)="D:":K=3:FOR I=1 TO 8:IF A$(I,I)="." THEN POP :GOTO 950
SV 940 X$(K,K)=A$(I,I):K=K+1:NEXT I
VV 950 X$(K,K)=".":K=K+1:FOR I=10 TO 12:IF A$(I,I)="." THEN POP :GOTO 970
SZ 960 X$(K,K)=A$(I,I):K=K+1:NEXT I
XQ 970 POKE 764,255:IF X$(3,9)="DOS.SYS" THEN DOS
ZK 980 FILE$=X$(1,K-1):IF FA=0 THEN RETURN
OJ 990 GOTO 150
YU 1000 REM DISABLE [BREAK]
CL 1010 POKE 16,112:POKE 53774,112
AF 1020 RETURN
UL 1030 P$(1)=" ":P$(5)=P$:P$(2)=P$:RETURN
AP 1040 FOR I=200 TO 0 STEP -10:SOUND 0,I,10,10:NEXT I:SOUND 0,0,0,0:RETURN
FR 1050 TRAP 40000:? "■■":POSITION 7,10:POKE 559,34:POKE 752,1:? "■Check printer or paper!■":POSITION 7,12
PP 1060 ? " Press RETURN when ready":CLOSE #KEYBOARD:OPEN #KEYBOARD,FROM,ZERO,"K:":GET #KEYBOARD,KEY:GOTO 440
GB 1070 REM ******************************
QY 1080 REM *■■■■■■■■■"TAPELESS"■■■■■■■■■*
PV 1090 REM *■■■■■■■■■■■■■by■■■■■■■■■■■■■*
YX 1100 REM *■■■■■■Robert Grunbok■■■■■■■■*
FL 1110 REM ******************************
```

LISTING 2

```
MF 10 REM MAKEAUTO.BAS
MR 20 REM BY ROBERT GRUNBOK
FW 30 REM (c) 1985, ANTIC PUBLISHING
YI 35 REM (CREATES AN "AUTORUN.SYS" FILE FOR PRNTLOAD.BAS)
CQ 40 REM (LINES 10-220 MAY BE USED WITH OTHER BASIC LOADERS IN THIS ISSUE.
IS 45 REM CHANGE LINE 70 AS NECESSARY.)
MG 50 DIM FN$(20),TEMP$(20),AR$(93)
HO 60 DPL=PEEK(10592):POKE 10592,255
MO 70 FN$="D:AUTORUN.SYS":REM THIS IS THE NAME OF THE DISK FILE TO BE CREATED
YS 80 GRAPHICS 0:? "       ANTIC'S GENERIC BASIC LOADER"
CD 90 ? ,"BY CHARLES JACKSON"
PW 100 POKE 10592,DPL:TRAP 170
PO 110 ? :? :? "Creating ";FN$:? "...Please stand by."
LQ 120 RESTORE :READ LN:LM=LN:DIM A$(LN):C=1
BK 130 AR$="":READ AR$
XW 140 FOR X=1 TO LEN(AR$) STEP 3:POKE 752,255
DG 150 LM=LM-1:POSITION 10,10:? "(Countdown...T-";INT(LM/10);")   "
UY 160 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+1:NEXT X:GOTO 130
MZ 170 IF PEEK(195)=5 THEN ? :? :? "■TOO MANY DATA LINES!":? "CANNOT CREATE FILE!":END
CZ 180 IF C<LN+1 THEN ? :? "■TOO FEW DATA LINES!":? "CANNOT CREATE FILE!":END
TI 200 STOP
AO 201 OPEN #1,8,0,FN$
PP 210 POKE 766,1:? #1;A$;:POKE 766,0
AF 220 CLOSE #1:GRAPHICS 0:? "■COMPLETED■"
IS 1000 DATA 156
IL 1010 DATA 255255000006141006162000189026003201069240005232232232208244232142105006189026003133205169107
NT 1020 DATA 157026003232189026003133206169006157026003160000162016177205153107006200202208247169067141111
```

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```
RK 1030 DATA 0061690061411120061690181411
        06006096172106006240009185123006206106
        006160001096138072174105006
TN 1040 DATA 1652051570260032321652061570
        26003104170169155160001096000000000000
        0000000000000000000000000
WH 1050 DATA 0000760000000000340830650660
        46068065079076084078082080058068034078
        085082255255226002227002000
GR 1060 DATA 006
```

LISTING 3

```
HR 1 REM TAPELESS
CY 2 REM BY ROBERT GRUNBOK
OC 3 REM (c)1987, ANTIC PUBLISHING INC.
OX 5 REM filename = TITLE.BAS
CG 10 REM TRAP 20:FAST:REM REMOVE FIRST
   'REM' IF YOU HAVE BASIC XE OR BASIC XL
    FROM O.S.S.
OH 20 TRAP 40000:GRAPHICS 2:START=PEEK(56
   0)+PEEK(561)*256:POKE START+9,6:POKE S
   TART+10,6:POKE START+11,6
OQ 30 POKE 708,14:POKE 709,0:POKE 710,12:
   POKE 711,8:POKE 712,40:POKE 752,1
UC 40 ? #6;"____________________";:? #6;"
       the tapeless  "
CG 45 ? #6;"spreadsheet  printer":? #6:?
   #6;"    BY BOB GRUNBOK"
LL 50 ? #6:? #6;" prints spreadsheets":?
   #6;"        sideways"
VA 60 ? #6;"____________________":? :? "▶
   Press  START  to continue":GOSUB 1150
JA 70 IF PEEK(53279)<>6 THEN 70
EU 90 DIM Z$(5),E$(5):Z$=CHR$(0):E$=CHR$(
   27):GRAPHICS 0:POKE 752,1:POKE 709,0:P
   OKE 710,12:POKE 712,40
CA 110 POSITION 11,9:? "TURN ON PRINTER":
   POSITION 10,11:? "Then press RETURN":C
   LOSE #1:OPEN #1,4,0,"K:":GOSUB 1150
BV 120 GET #1,A
OE 130 ? "█":POSITION 5,9:? "DOWNLOADING
   PRINTER CHARACTERS":POSITION 10,11:? "
   PLEASE STAND BY..."
EJ 140 TRAP 1130:CLOSE #7:OPEN #7,8,0,"P:
   ":? #7:FOR I=1 TO 600:NEXT I:POKE 559,
   0
HO 200 CLOSE #1:CLOSE #7:POKE 559,34:? "█
   ":POSITION 10,11:? "Loading Main Progr
   am":RUN "D:TAPELESS.BAS"
BT 1130 IF PEEK(195)=138 THEN POKE 559,34
   :? "██":TRAP 40000:GOTO 110
TC 1140 ? "██":POSITION 9,10:? "Error # "
   ;PEEK(195);" Occurred!":POKE 559,34:PO
   KE 752,0:END
JD 1150 BREAK=PEEK(16)-128:IF BREAK<0 THE
   N RETURN
JT 1160 POKE 16,BREAK:POKE 53774,BREAK:RE
   TURN
```

LISTING 4

```
UA 10 REM TAPELESS
MU 12 REM BY ROBERT GRUNBOK
ZH 14 REM (c)1987, ANTIC PUBLISHING INC.
TP 16 REM TOPDOT1
RI 210 REM filename = TOPDOT1.LST
JJ 220 REM CHARACTER SET DATA FOR:
   GEMINI 10/15X AND OKIDATA 92/93
   (PRINTHEAD TOP DOT VALUE = 1)
NX 230 DATA 33,8,0,0,0,8,0,8,0,8
ZW 240 DATA 34,0,0,0,0,0,0,20,0,20
JX 250 DATA 35,20,0,20,107,20,0,127,0,20
NX 260 DATA 36,8,55,72,0,127,0,9,118,8
CF 270 DATA 37,49,72,51,4,8,16,102,9,70
RE 280 DATA 38,94,33,16,41,78,16,2,16,12
GL 290 DATA 39,0,0,0,0,0,0,8,0,8
YN 300 DATA 40,32,16,8,0,8,0,8,16,32
PI 310 DATA 41,2,4,8,0,8,0,8,4,2
UW 320 DATA 42,0,34,20,8,119,8,20,34,0
FI 330 DATA 43,0,8,0,8,119,8,0,8,0
ZG 340 DATA 44,4,8,0,12,0,0,0,0,0
EI 350 DATA 45,0,0,0,0,127,0,0,0,0
YY 360 DATA 46,12,0,12,0,0,0,0,0,0
MC 370 DATA 47,0,1,2,4,8,16,32,64,0
XA 380 DATA 48,28,34,69,8,65,8,81,34,28
FO 390 DATA 49,28,0,8,0,8,0,8,4,8
ZT 400 DATA 50,127,0,1,2,60,64,0,65,62
WT 410 DATA 51,62,65,0,64,32,28,32,64,63
JI 420 DATA 52,32,0,127,1,34,4,40,16,32
OB 430 DATA 53,31,32,64,0,65,62,1,0,127
BV 440 DATA 54,28,34,65,0,67,60,1,2,60
PE 450 DATA 55,4,0,4,8,16,32,64,0,127
CY 460 DATA 56,62,65,0,65,28,34,0,34,28
XW 470 DATA 57,14,16,32,64,62,65,0,65,62
WG 480 DATA 58,12,0,12,0,0,12,0,12,0
UX 490 DATA 59,4,8,0,12,0,0,12,0,12
BD 500 DATA 60,32,16,8,4,2,4,8,16,32
AI 510 DATA 61,0,0,127,0,0,127,0,0,0
QH 520 DATA 62,2,4,8,16,32,16,8,4,2
QK 530 DATA 63,8,0,0,8,16,32,0,33,30
XU 540 DATA 64,126,1,0,57,68,57,64,33,30
IY 550 DATA 65,65,0,65,62,65,0,65,34,28
RQ 560 DATA 66,63,64,1,96,31,32,65,32,31
QG 570 DATA 67,60,66,1,0,1,0,65,66,60
SQ 580 DATA 68,31,32,65,0,65,0,65,32,31
VI 590 DATA 69,127,0,1,0,31,0,1,0,127
TR 600 DATA 70,1,0,1,0,31,0,1,0,127
IS 610 DATA 71,124,2,65,0,121,0,1,66,60
EI 620 DATA 72,65,0,65,0,127,0,65,0,65
DP 630 DATA 73,62,0,8,0,8,0,8,0,62
MQ 640 DATA 74,28,34,64,0,64,0,64,0,96
VN 650 DATA 75,65,32,17,8,7,8,17,32,65
FQ 660 DATA 76,127,0,1,0,1,0,1,0,1
ZZ 670 DATA 77,65,0,65,0,65,8,85,34,65
CR 680 DATA 78,97,16,65,8,65,4,65,2,65
MZ 690 DATA 79,62,65,0,65,0,65,0,65,62
AH 700 DATA 80,1,0,1,0,63,64,1,64,63
CJ 710 DATA 81,94,33,16,73,0,65,0,65,62
CF 720 DATA 82,65,32,17,0,63,64,1,64,63
GS 730 DATA 83,62,65,0,64,62,1,0,65,62
HF 740 DATA 84,8,0,8,0,8,0,8,0,127
LL 750 DATA 85,92,34,65,0,65,0,65,0,65
RE 760 DATA 86,8,20,34,0,65,0,65,0,65
DC 770 DATA 87,65,34,85,8,65,8,65,0,65
JJ 780 DATA 88,65,34,20,8,0,8,20,34,65
MT 790 DATA 89,8,0,8,0,28,34,65,0,65
XT 800 DATA 90,127,0,2,4,8,16,32,0,127
IS 810 DATA 91,56,0,8,0,8,0,8,0,56
FV 820 DATA 92,0,64,32,16,8,4,2,1,0
ZQ 830 DATA 93,14,0,8,0,8,0,8,0,14
QP 840 DATA 94,0,0,0,0,0,0,34,20,8
YF 850 DATA 95,127,0,127,0,0,0,0,0,0
SM 860 DATA 97,94,33,0,49,14,32,17,14,0
RK 870 DATA 98,63,64,1,64,63,0,1,0,1
UF 880 DATA 99,62,1,0,1,0,33,30,0,0
EA 890 DATA 100,126,1,64,1,126,0,64,0,64
LA 900 DATA 101,62,1,0,127,0,65,62,0,0
IR 910 DATA 102,4,0,4,0,30,0,4,8,48
VY 920 DATA 103,60,64,0,124,2,64,2,124,0
KT 930 DATA 104,33,0,33,0,33,30,1,0,1
AW 940 DATA 105,28,0,8,0,12,0,0,0,12
HY 950 DATA 106,14,17,0,16,0,24,0,0,24
AA 960 DATA 107,34,16,10,4,10,16,34,0,2
GS 970 DATA 108,28,0,8,0,8,0,8,0,12
AD 980 DATA 109,73,0,73,0,73,54,0,0,0
ZA 990 DATA 110,66,0,66,0,66,61,0,0,0
HB 1000 DATA 111,28,34,65,0,65,34,28,0,0
TX 1010 DATA 112,2,0,2,60,64,2,64,62,0
PT 1020 DATA 113,96,0,32,30,33,0,33,30,0
ER 1030 DATA 114,2,0,2,0,34,29,0,0,0
YC 1040 DATA 115,63,64,32,28,2,1,126,0,0
BE 1050 DATA 116,16,40,4,0,4,26,4,0,4
FB 1060 DATA 117,94,33,0,33,0,33,0,0,0
PM 1070 DATA 118,8,20,34,65,0,65,0,0,0
OP 1080 DATA 119,54,73,0,73,0,73,0,0,0
AJ 1090 DATA 120,65,34,20,8,20,34,65,0,0
CC 1100 DATA 121,30,32,64,60,66,0,66,0,0
AX 1110 DATA 122,61,2,4,8,16,47,0,0,0
JL 1120 DATA 124,12,0,12,0,12,0,12,0,12
```

LISTING 5

```
UA 10 REM TAPELESS
MU 12 REM BY ROBERT GRUNBOK
ZH 14 REM (c)1987, ANTIC PUBLISHING INC.
GY 16 REM BOTMDOT1
ZU 210 REM FILENAME = BOTMDOT1.LST
TB 220 REM CHARACTER SET DATA FOR:
   GEMINI SG10/15 AND EPSON FX80/100
   (PRINTHEAD BOTTOM DOT VALUE=1)
NX 230 DATA 33,8,0,0,0,8,0,8,0,8
ZW 240 DATA 34,0,0,0,0,0,0,20,0,20
AZ 250 DATA 35,20,0,20,107,20,107,20,0,20

MV 260 DATA 36,8,119,8,1,126,0,72,54,8
GC 270 DATA 37,70,9,102,18,8,36,51,72,49
NK 280 DATA 38,61,66,4,66,57,4,32,4,24
```

```
GL 290 DATA 39,0,0,0,0,0,0,8,0,8
OV 300 DATA 40,2,4,8,0,8,0,8,4,2
ZA 310 DATA 41,32,16,8,0,8,0,8,16,32
UW 320 DATA 42,0,34,20,8,119,8,20,34,0
FI 330 DATA 43,0,8,0,8,119,8,0,8,0
GY 340 DATA 44,16,8,0,32,0,0,0,0,0
EI 350 DATA 45,0,0,0,0,127,0,0,0,0
CR 360 DATA 46,24,0,24,0,0,0,0,0,0
GF 370 DATA 47,0,64,32,16,8,4,2,1,0
ZI 380 DATA 48,28,34,81,8,65,8,69,34,28
OK 390 DATA 49,28,0,8,0,8,0,8,16,8
LQ 400 DATA 50,127,0,64,32,30,1,0,65,62
FT 410 DATA 51,62,65,0,1,2,28,2,1,126
ZS 420 DATA 52,6,0,127,0,34,16,10,4,2
RF 430 DATA 53,124,2,1,0,65,62,64,0,127
QP 440 DATA 54,28,34,65,0,97,30,64,32,30
TL 450 DATA 55,16,0,16,8,4,2,1,0,127
CY 460 DATA 56,62,65,0,65,28,34,0,34,28
RA 470 DATA 57,62,1,0,1,60,67,0,65,62
GM 480 DATA 58,24,0,24,0,0,24,0,24,0
OI 490 DATA 59,16,8,0,24,6,0,24,0,24
PH 500 DATA 60,2,4,8,16,32,16,8,4,2
AI 510 DATA 61,0,0,127,0,0,127,0,0,0
CD 520 DATA 62,32,16,8,4,2,4,8,16,32
FA 530 DATA 63,8,0,0,8,4,2,0,66,60
NW 540 DATA 64,63,64,0,78,17,78,1,66,60
IY 550 DATA 65,65,0,65,62,65,0,65,34,28
MF 560 DATA 66,126,1,64,3,124,2,65,2,126
PG 570 DATA 67,30,33,64,0,64,0,64,33,30
SZ 580 DATA 68,124,2,65,0,65,0,65,2,124
CQ 590 DATA 69,127,0,64,0,120,0,64,0,127
LP 600 DATA 70,64,0,64,0,124,0,64,0,127
TB 610 DATA 71,31,32,65,0,79,0,64,33,30
EI 620 DATA 72,65,0,65,0,127,0,65,0,65
DP 630 DATA 73,62,0,8,0,8,0,8,0,62
LI 640 DATA 74,28,34,1,0,1,0,1,0,3
YF 650 DATA 75,65,2,68,8,112,8,68,2,65
CS 660 DATA 76,127,0,64,0,64,0,64,0,64
ZZ 670 DATA 77,65,0,65,0,65,8,85,34,65
UD 680 DATA 78,67,4,65,8,65,16,65,32,65
MZ 690 DATA 79,62,65,0,65,0,65,0,65,62
OV 700 DATA 80,64,0,64,0,126,1,64,1,126
LO 710 DATA 81,61,66,4,73,0,65,0,65,62
FL 720 DATA 82,65,2,68,0,63,1,64,1,126
IK 730 DATA 83,62,65,0,1,62,64,0,65,62
HF 740 DATA 84,8,0,8,0,8,0,8,0,127
LS 750 DATA 85,29,34,65,0,65,0,65,0,65
RE 760 DATA 86,8,20,34,0,65,0,65,0,65
DC 770 DATA 87,65,34,85,8,65,8,65,0,65
JJ 780 DATA 88,65,34,20,8,0,8,20,34,65
MT 790 DATA 89,8,0,8,0,28,34,65,0,65
WP 800 DATA 90,127,0,32,16,8,4,2,0,127
YQ 810 DATA 91,14,0,8,0,8,0,8,0,14
LS 820 DATA 92,0,1,2,4,8,16,32,64,0
JS 830 DATA 93,56,0,8,0,8,0,8,0,56
QP 840 DATA 94,0,0,0,0,0,0,34,20,8
CD 850 DATA 95,127,0,0,0,0,0,0,0,0
WY 860 DATA 97,61,66,0,70,56,2,124,56,0
TM 870 DATA 98,126,1,64,1,126,0,64,0,64
JJ 880 DATA 99,62,64,0,64,0,66,60,0,0
WB 890 DATA 100,63,64,1,64,63,0,1,0,1
FO 900 DATA 101,62,64,0,127,0,65,62,0,0
FJ 910 DATA 102,16,0,16,0,60,0,16,8,6
BO 920 DATA 103,30,1,0,1,30,33,0,33,30
YZ 930 DATA 104,66,0,66,0,66,60,64,0,64
HJ 940 DATA 105,28,0,8,0,24,0,0,0,24
JH 950 DATA 106,56,68,0,4,0,4,0,12,0
GO 960 DATA 107,34,4,40,16,40,4,34,0,32
KJ 970 DATA 108,28,0,8,0,8,0,8,0,24
AD 980 DATA 109,73,0,73,0,73,54,0,0,0
RW 990 DATA 110,33,0,33,0,33,94,0,0,0
HB 1000 DATA 111,28,34,65,0,65,34,28,0,0
AR 1010 DATA 112,32,0,32,0,62,1,32,1,62
AI 1020 DATA 113,3,0,2,0,62,64,2,64,62
FH 1030 DATA 114,32,0,32,0,34,92,0,0,0
CK 1040 DATA 115,126,1,2,28,32,64,63,0,0
CG 1050 DATA 116,4,10,16,0,16,44,16,0,16
RD 1060 DATA 117,60,66,0,66,0,66,0,0,0
PM 1070 DATA 118,8,20,34,65,0,65,0,0,0
OP 1080 DATA 119,54,73,0,73,0,73,0,0,0
AJ 1090 DATA 120,65,34,20,8,20,34,65,0,0
WI 1100 DATA 121,60,2,1,30,33,0,33,0,33
AN 1110 DATA 122,94,32,16,8,4,122,0,0,0
YG 1120 DATA 124,24,0,24,0,24,0,24,0,24
```

LISTING 6

```
UA 10 REM TAPELESS
MU 12 REM BY ROBERT GRUNBOK
ZH 14 REM (c)1987, ANTIC PUBLISHING INC.
HR 18 REM FX80LOAD.LST
BI 80 REM EPSON FX80/100 CHARACTER LOADER
LG 100 ? "}":POSITION 5,5:? "Is printer D
   IP switch 1-4 off?"
YF 150 FOR I=1 TO 90:READ LTR:? #7;E$;"&"
   ;Z$;CHR$(LTR);CHR$(LTR);CHR$(139);
SX 160 IF (LTR=103) OR (LTR=106) OR (LTR=
   112) OR (LTR=113) OR (LTR=121) THEN GO
   SUB 210:? #7;Z$;Z$;:NEXT I:GOTO 180
ZP 170 ? #7;Z$;Z$;:GOSUB 210:NEXT I
VZ 180 ? #7;E$;"%[H]";Z$;:REM SELECT DOWNLO
   ADABLE CHARACTERS
WY 190 ? #7;E$;"0":? #7:REM 8 LINES PER I
   NCH
QQ 210 FOR J=1 TO 9:READ LTR:? #7;CHR$(LT
   R);:NEXT J:RETURN
```

LISTING 7

```
UA 10 REM TAPELESS
MU 12 REM BY ROBERT GRUNBOK
ZH 14 REM (c)1987, ANTIC PUBLISHING INC.
II 18 REM G10XLOAD.LST
CF 80 REM GEMINI 10X/15X CHARACTER LOADER
EZ 150 FOR I=1 TO 90:READ LTR:? #7;E$;CHR
   $(42);CHR$(1);CHR$(LTR);Z$;
EV 160 FOR J=1 TO 9:READ LTR:? #7;CHR$(LT
   R);:NEXT J:NEXT I
LR 180 ? #7;E$;CHR$(36);CHR$(1);:REM SELE
   CT DOWNLOADABLE CHARACTERS
BA 190 ? #7;E$;CHR$(48):? #7:REM 8 LINES
   PER INCH
VY 920 DATA 103,60,64,0,124,2,64,2,124,0
HY 950 DATA 106,14,17,0,16,0,24,0,0,24
TX 1010 DATA 112,2,0,2,60,64,2,64,62,0
PT 1020 DATA 113,96,0,32,30,33,0,33,30,0
CC 1100 DATA 121,30,32,64,60,66,0,66,0,0
```

LISTING 8

```
UA 10 REM TAPELESS
MU 12 REM BY ROBERT GRUNBOK
ZH 14 REM (c)1987, ANTIC PUBLISHING INC.
VZ 18 REM OKILOAD.LST
KA 80 REM OKIDATA 92/93 CHARACTER LOADER
VE 100 REM DON'T REMOVE THIS LINE
HG 150 FOR I=1 TO 90:READ LTR:? #7;E$;"%A
   ";CHR$(LTR);
SX 160 IF (LTR=103) OR (LTR=106) OR (LTR=
   112) OR (LTR=113) OR (LTR=121) THEN GO
   SUB 210:? #7;Z$;Z$;:NEXT I:GOTO 180
ZP 170 ? #7;Z$;Z$;:GOSUB 210:NEXT I
JD 180 ? #7;E$;"2";:REM SELECT DOWNLOADAB
   LE CHARACTERS
BG 190 ? #7;E$;"8":? #7:REM 8 LINES PER I
   NCH
QQ 210 FOR J=1 TO 9:READ LTR:? #7;CHR$(LT
   R);:NEXT J:RETURN
```

LISTING 9

```
UA 10 REM TAPELESS
MU 12 REM BY ROBERT GRUNBOK
ZH 14 REM (c)1987, ANTIC PUBLISHING INC.
DC 18 REM SG10LOAD.LST
ZU 80 REM STAR SG10/15 CHARACTER LOADER
NF 100 ? "}":POSITION 5,5:? "Is printer D
   IP switch 1-5 off?"
TM 150 FOR I=1 TO 90:READ LTR:? #7;E$;"*[H]
   ";CHR$(LTR);CHR$(LTR);CHR$(139);
SX 160 IF (LTR=103) OR (LTR=106) OR (LTR=
   112) OR (LTR=113) OR (LTR=121) THEN GO
   SUB 210:? #7;Z$;Z$;:NEXT I:GOTO 180
ZP 170 ? #7;Z$;Z$;:GOSUB 210:NEXT I
VR 180 ? #7;E$;"$[H]";:REM SELECT DOWNLOADA
   BLE CHARACTERS
WY 190 ? #7;E$;"0":? #7:REM 8 LINES PER I
   NCH
QQ 210 FOR J=1 TO 9:READ LTR:? #7;CHR$(LT
   R);:NEXT J:RETURN
```

ST RESOURCE

ALPHABET FISH

Article on page 49

LISTING 1

```
1000  '
1010  '
1020  ' ALPHABET FISH
1030  ' (c) 1987 Antic Publishing
1040  ' Version 042187
1050  ' Written by Deborah H. Lundgren
1060  '
1070  '--------------------------------
1080  HOUSEKEEPING:
1090   gosub NAMEGAME
1100   gosub SETCOLOR
1110   '
1120   while PLAYING
1130      DING$=chr$(7): YES=1: NO=0: GOOD=1: MOUSE=0
1140      COUNT=1: FINISHED=27: F=11: G=3
1150      gosub DECIDE
1160      gosub PICTURE
1170      gosub GAMELOOP
1180      gosub ABCSONG
1190      gotoxy 10,1: input "Play Again? (Y/N)",PLAY$
1200      PLAY$=left$(PLAY$,1)
1210      if PLAY$<>"y" or PLAY$<>"Y" then PLAYING=FALSE
1220   wend
1230  end
1240  '
1250  '------------------------------------
1260  NAMEGAME:
1270   A#=GB
1280   ADDRESS=peek(A#+8)
1290   AESOUT=peek(SYSTAB+8)
1300   poke SYSTAB+24,1
1310   NAME$=" Alphabet Fish "
1320   poke ADDRESS+0,AESOUT
1330   poke ADDRESS+2,2
1340   S#=ADDRESS+4
1350   NAME$=NAME$+chr$(0)
1360   poke S#,varptr(NAME$)
1370   gemsys(105)
1380   poke SYSTAB+24,0
1390  return
1400  '
1410  ' In GFA BASIC:
1420  '
1430  ' NAMEGAME:
1440  ' Titlew 2," Alphabet Fish "
1450  ' return
1460  '----------------------------------
1470  SETCOLOR:
1480  '
1490   TRUE=(-1): FALSE=0: PLAYING=TRUE
1500  '
1510   dim P%(16)
1520   for P=0 to 15
1530      read Z
1540      P%(P)=Z
1550   next P
1560  data 1911,1792,96,1856,7
1570  data 1799,119,1365,819,1792
```

Checksum for file:

```
1000 :00F2
1010 :00E9
1020 :0455
1030 :087C
1040 :0508
1050 :0B1F
1060 :00EE
1070 :0662
1080 :048A
1090 :0525
1100 :054D
1110 :00EA
1120 :04F1
1130 :0B0F
1140 :07F7
1150 :0485
1160 :0504
1170 :053D
1180 :04E7
1190 :0D43
1200 :0631
1210 :0CE1
1220 :0273
1230 :01FD
1240 :00EE
1250 :0743
1260 :033E
1270 :01F4
1280 :05CB
1290 :0709
1300 :0537
1310 :0736
1320 :06D3
1330 :0537
1340 :03E0
1350 :059D
1360 :0750
1370 :044A
1380 :053E
1390 :036D
1400 :00EC
1410 :040E
1420 :00EE
1430 :0364
1440 :08B6
1450 :0391
1460 :06BF
1470 :0371
1480 :00F4
1490 :08D7
1500 :00ED
1510 :032E
1520 :0415
1530 :02BF
1540 :0277
1550 :02DA
1560 :062F
1570 :06D0
```

```
1580  data 96,1904,119,1799,119,0                                        1580 :06C1
1590   defdbl L:L=1114                                                   1590 :0506
1600   poke L,varptr (P%(0))                                             1600 :06D4
1610  return                                                             1610 :0368
1620  '                                                                  1620 :00F0
1630  '-------------------------------                                   1630 :0664
1640  DECIDE:                                                            1640 :02A3
1650   fullw 2: clearw 2                                                 1650 :0612
1660   color 2,14,14,5,2: ellipse 145,25,24,12,180,3420                  1660 :0C2F
1670   linef 161,19,175,16: linef 175,16,175,34                          1670 :0A3A
1680   linef 175,34,161,31                                               1680 :0561
1690   fill 150,20                                                       1690 :039B
1700   gotoxy 15,2: print "HI!"                                          1700 :0793
1710   color 2,3,3,5,2                                                   1710 :0497
1720   ellipse 75,15,12,6,180,3420                                       1720 :0761
1730   linef 85,12,92,9: linef 92,9,92,21                                1730 :090F
1740   linef 92,21,85,18                                                 1740 :0502
1750   fill 75,12                                                        1750 :036F
1760   gotoxy 8,1: print "A"                                             1760 :06F9
1770   color 2,4,4,5,2                                                   1770 :049F
1780   ellipse 212,15,12,6,180,3420                                      1780 :0790
1790   linef 222,12,229,9: linef 229,9,229,21                            1790 :09D4
1800   linef 229,21,222,18                                               1800 :055A
1810   fill 215,15                                                       1810 :039B
1820   gotoxy 23,1: print "a"                                            1820 :0743
1830   sound 1,0,0,0,100: color 1,0,1,1,1                                1830 :08F4
1840   CHOICE=0                                                          1840 :02E5
1850   while CHOICE=0                                                    1850 :04FF
1860      gotoxy 3,5: print "Uppercase or Lowercase (U/L)?"              1860 :1046
1870      color 2: gotoxy 29,5: input " ",CHOICE$: color 1               1870 :0E04
1880      UPPERCASE=FALSE                                                1880 :0521
1890      if CHOICE$="U" or CHOICE$="u" then CASE=1: CHOICE=GOOD         1890 :0E70
1900      if CHOICE$="U" or CHOICE$="u" then UPPERCASE=TRUE              1900 :0DB8
1910      if CHOICE$="L" or CHOICE$="l" then CASE=2: CHOICE=GOOD         1910 :0E58
1920   wend                                                              1920 :027A
1930   CHOICE=0                                                          1930 :02E5
1940   while CHOICE=0                                                    1940 :04FF
1950      gotoxy 3,8: print "  Mouse or Keyboard (M/K)?  "               1950 :0E2D
1960      color 2: gotoxy 26,8: input " ",CHOICE$: color 1               1960 :0E04
1970      if CHOICE$="K" or CHOICE$="k" then CHOICE=GOOD                 1970 :0C97
1980      if CHOICE$="M" or CHOICE$="m" then MOUSE=YES:CHOICE=GOOD       1980 :0F8D
1990   wend                                                              1990 :0281
2000  return                                                             2000 :0362
2010  '                                                                  2010 :00EA
2020  '------------------------------                                    2020 :0631
2030  PICTURE:                                                           2030 :031B
2040   restore FISHPICS                                                  2040 :0623
2050   fullw 2: clearw 2                                                 2050 :060D
2060  '                                                                  2060 :00EF
2070  'FISH                                                              2070 :021A
2080   for LETTER = 1 to 26                                              2080 :059A
2090      read C,N,D,X,Y,X1,Y1,UC$,LC$                                   2090 :07CF
2100      color 1,C,C,5,2                                                2100 :04B0
2110      ellipse X,Y,12,6,180,3420                                      2110 :073A
2120      linef X+10,Y-3,X+17,Y-6: linef X+17,Y-6,X+17,Y+6               2120 :0CB3
2130      linef X+17,Y+6,X+10,Y+3                                        2130 :0698
2140      fill X,Y                                                       2140 :034B
2150      gotoxy X1,Y1                                                   2150 :04B1
2160      if UPPERCASE then print UC$ else print LC$                     2160 :0D61
2170   next LETTER                                                       2170 :0459
2180   restore FISHPICS                                                  2180 :0628
2190  '                                                                  2190 :00F3
2200  'SEA                                                               2200 :01C4
2210   color 1,5,5,1,1                                                   2210 :0491
2220   for X=2 to 300 step 12                                            2220 :0669
2230      circle X,79,12,2300,3100                                       2230 :069D
2240   next X                                                            2240 :02DF
2250   circle 302,79,12,2300,3000                                        2250 :06DB
2260   fill 50,115                                                       2260 :0399
2270  '                                                                  2270 :00F2
2280  'SUN                                                               2280 :01E9
2290   color 1,14,14,2,1                                                 2290 :04FA
```

continued on next page

```
2300   pcircle 303,0,45,1800,2700                                   2300 :0718
2310   fill 300,5                                                   2310 :0361
2320   linef 250,5,230,5: linef 255,20,235,30                       2320 :09B6
2330   linef 264,35,250,53: linef 280,45,271,73                     2330 :0A30
2340   linef 295,50,295,82                                          2340 :056A
2350  '                                                             2350 :00F1
2360  'RECTANGLE                                                    2360 :0387
2370   color 1,5,1,1,1                                              2370 :0494
2380   linef 97,25,217,25: linef 217,25,217,50                      2380 :0A03
2390   linef 217,50,97,50: linef 97,50,97,25                        2390 :09AC
2400   fill 100,30                                                  2400 :038D
2410   '                                                            2410 :00EE
2420  'FISHINGPOLE                                                  2420 :0427
2430   color 1,9,9,1,1                                              2430 :049D
2440   linef 0,80,40,20: linef 40,20,42,21                          2440 :0915
2450   linef 42,21,2,81: linef 2,81,0,80                            2450 :08C0
2460   fill 40,21                                                   2460 :0366
2470   linef 42,21,44,30                                            2470 :04F3
2480   color 1,2,2,1,1                                              2480 :0494
2490   circle 44,32,2                                               2490 :0498
2500   fill 44,32                                                   2500 :0367
2510   color 1,0,9,1,1                                              2510 :0493
2520   linef 44,34,44,36                                            2520 :04FB
2530   circle 46,36,2,1800,3600                                     2530 :0683
2540   sound 1,0,0,0,100                                            2540 :04F6
2550  return                                                        2550 :036C
2560  '                                                             2560 :00F4
2570  '------------------------------                               2570 :063B
2580  GAMELOOP:                                                     2580 :035D
2590   read C,N,D,X,Y,X1,Y1,UC$,LC$                                 2590 :07D4
2600   while COUNT < FINISHED                                       2600 :06F0
2610      gosub ERASESMILE                                          2610 :05D3
2620      if MOUSE=YES then gosub CLICKFISH else gosub KEYBOARD     2620 :10C9
2630      if ANS$=UC$ or ANS$=LC$ then gosub GOTFISH else gosub WRONG  2630 :11A9
2640   wend                                                         2640 :027A
2650  return                                                        2650 :036D
2660  '                                                             2660 :00F5
2670  '-----------------------------                                2670 :060F
2680  ERASESMILE:                                                   2680 :03F4
2690   color 1,14,14                                                2690 :0443
2700   circle 303,0,25,2000,2700                                    2700 :06A3
2710   circle 303,0,26,2000,2700                                    2710 :06A5
2720  return                                                        2720 :036B
2730  '                                                             2730 :00F3
2740  '-------------------------------                              2740 :0667
2750  KEYBOARD:                                                     2750 :0359
2760   gotoxy 10,1: input "Choose Letter    ",ANS$                  2760 :0CE8
2770  return                                                        2770 :0370
2780  '                                                             2780 :00F8
2790  '-------------------------------                              2790 :066C
2800  CLICKFISH:                                                    2800 :0394
2810   CLICK=NO: CORRECT$=UC$                                       2810 :0674
2820   gotoxy 10,1: print "   Choose Fish   "                       2820 :0ACA
2830   while CLICK=NO                                               2830 :0526
2840      CONTROL=peek(A#)                                          2840 :0586
2850      GLOBAL=peek(A#+4)                                         2850 :0576
2860      GINTIN=peek(A#+8)                                         2860 :0593
2870      GINTOUT=peek(A#+12)                                       2870 :0620
2880      ADDRIN=peek(A#+16)                                        2880 :05AD
2890      ADDROUT=peek(A#+20)                                       2890 :060A
2900      gemsys(79)                                                2900 :0424
2910      XM=peek(GINTOUT+2)                                        2910 :062B
2920      YM=peek(GINTOUT+4)                                        2920 :062F
2930      CLICK=peek(GINTOUT+6)                                     2930 :06F2
2940   wend                                                         2940 :027D
2950  '                                                             2950 :00F7
2960   PART.ONE=FALSE                                               2960 :04C0
2970   PART.TWO=FALSE                                               2970 :04D9
2980  '                                                             2980 :00FA
2990   if XM>(X-12) AND XM<(X+12) then PART.ONE=TRUE                2990 :0C1D
3000   if YM>(Y+14) AND YM<(Y+26) then PART.TWO=TRUE                3000 :0C2D
3010   if PART.ONE=TRUE and PART.TWO=TRUE then ANS$=CORRECT$        3010 :0F8E
```

```
3020  return                                                    3020 :0365
3030  '                                                         3030 :00ED
3040  '-----------------------------------                      3040 :0742
3050  WRONG:                                                    3050 :028F
3060   sound 1,0,0,0,30                                         3060 :04C6
3070   sound 1,15,12,2,20: sound 1,0,0,0,50                     3070 :096A
3080   gotoxy 10,1: print " SORRY,TRY AGAIN!    "               3080 :0B29
3090   sound 1,0,0,0,120                                        3090 :04F9
3100   gotoxy 10,1: print "                     "               3100 :06D7
3110  return                                                    3110 :0365
3120  '                                                         3120 :00ED
3130  '----------------------------------                       3130 :0715
3140  GOTFISH:                                                  3140 :0316
3150  'ERASEFISH                                                3150 :038A
3160   color 1,5,5,1,1                                          3160 :0496
3170   for D=Y-6 to Y+6                                         3170 :04EC
3180      linef X-12,D,X+17,D                                   3180 :05B9
3190   next D                                                   3190 :02D0
3200   fill X,Y                                                 3200 :0349
3210  '                                                         3210 :00ED
3220  'SMILE                                                    3220 :0268
3230   print DING$                                              3230 :043B
3240   color 0,0,0                                              3240 :03D0
3250   circle 303,0,25,2000,2700                                3250 :06A4
3260   circle 303,0,26,2000,2700                                3260 :06A6
3270  '                                                         3270 :00F3
3280  'ERASE LETTERS                                            3280 :0487
3290   gotoxy 10,1: print "                  "                  3290 :06E1
3300  '                                                         3300 :00ED
3310  'DRAW NEW FISH                                            3310 :0430
3320   color 1,C,C,5,2                                          3320 :04B5
3330   ellipse 48,46,6,12,2880,2520                             3330 :079D
3340   linef 45,56,42,63: linef 42,63,54,63                     3340 :096C
3350   linef 54,63,51,56                                        3350 :0500
3360   fill 48,46                                               3360 :0375
3370   gotoxy 5,4                                               3370 :040C
3380   if UPPERCASE then print UC$ else print LC$               3380 :0D66
3390   sound 1,0,0,0,100                                        3390 :04FA
3400  '                                                         3400 :00EE
3410  'ERASE NEW FISH                                           3410 :0473
3420   color 0,0,0,1,1                                          3420 :048A
3430   for Y=63 to 35 STEP -1                                   3430 :05F5
3440      linef 42,Y,54,Y                                       3440 :04DE
3450   next Y                                                   3450 :02E4
3460  '                                                         3460 :00F4
3470  'REPLACEHOOK                                              3470 :0422
3480   color 1,0,9,1,1                                          3480 :049A
3490   linef 44,34,44,36                                        3490 :0502
3500   circle 46,36,2,1800,3600                                 3500 :0681
3510  '                                                         3510 :00F0
3520  'ENTER LETTER                                             3520 :043F
3530   color 1,0,1                                              3530 :03D4
3540   gotoxy F,G                                               3540 :042F
3550   if UPPERCASE then print UC$ else print LC$               3550 :0D65
3560   F=F+1                                                    3560 :01F3
3570   if F=24 then F=11: G=4                                   3570 :060D
3580   read C,N,D,X,Y,X1,Y1,UC$,LC$                             3580 :07D4
3590   COUNT=COUNT+1                                            3590 :047C
3600  '                                                         3600 :00F0
3610  return                                                    3610 :036A
3620  '                                                         3620 :00F2
3630  '----------------------------------                       3630 :06C0
3640  ABCSONG:                                                  3640 :0304
3650   sound 1,0,0,0,30                                         3650 :04CB
3660   gotoxy 10,1: print "   GOOD JOB!   "                     3660 :0907
3670   sound 1,0,0,0,60                                         3670 :04D0
3680   restore FISHPICS                                         3680 :062E
3690   F=11: G=3: TIMES=1                                       3690 :04D2
3700   while TIMES<=26                                          3700 :0546
3710      read C,N,D,X,Y,X1,Y1,UC$,LC$                          3710 :07CF
3720      color C,0,1,1,1                                       3720 :04A1
3730      gotoxy F,G                                            3730 :0430
```

continued on next page

```
3740       if UPPERCASE then print UC$ else print LC$
3750       sound 1,10,N,4,D
3760       sound 1,0,0,0,0
3770       F=F+1: TIMES=TIMES+1
3780       if F=24 then F=11: G=4
3790    wend
3800    TIMES=1
3810    color 1,0,1,1,1
3820    while TIMES <=14
3830       read N,D
3840       sound 1,10,N,4,D
3850       sound 1,0,0,0,0
3860       TIMES=TIMES+1
3870    wend
3880    sound 1,0,0,0,60
3890   return
3900   '
3910   '--------------------------------
3920   FISHPICS:
3930   data 15,1,19,50,150,5,16,A,a,3,1,19,245,105,27,11,B,b
3940   data 3,8,19,150,150,16,16,C,c,8,8,19,256,150,28,16,D,d
3950   data 4,10,19,102,96,11,10,E,e,10,10,19,22,105,2,11,F,f
3960   data 9,8,39,175,132,19,14,G,g,7,6,19,290,122,32,13,H,h
3970   data 14,6,19,166,96,18,10,I,i,10,5,19,15,132,1,14,J,j
3980   data 4,5,19,102,150,11,16,K,k,8,3,9,210,105,23,11,L,l
3990   data 3,3,9,20,150,2,16,M,m,14,3,9,47,122,5,13,N,n
4000   data 9,3,9,58,96,6,10,O,o,7,1,39,257,123,28,13,P,p
4010   data 10,8,19,123,113,13,12,Q,q,11,8,19,83,113,9,12,R,r
4020   data 8,6,39,87,131,9,14,S,s,2,5,19,220,123,24,13,T,t
4030   data 2,5,19,282,96,31,10,U,u,11,3,39,229,140,25,15,V,v
4040   data 6,8,39,200,149,22,16,W,w,6,6,39,128,131,14,14,X,x
4050   data 7,5,39,173,113,19,12,Y,y,4,3,39,284,141,31,15,Z,z
4060   ENDSONG:
4070   data 1,19,1,19,8,19,8,19,10,19,10,19,8,39
4080   data 6,19,6,19,5,19,5,19,3,19,3,19,1,39
```

```
3740 :0D66
3750 :0500
3760 :049A
3770 :05CD
3780 :0610
3790 :0281
3800 :02BB
3810 :048F
3820 :0546
3830 :0328
3840 :0500
3850 :049A
3860 :046E
3870 :0280
3880 :04D3
3890 :0374
3900 :00F3
3910 :0667
3920 :0361
3930 :0BFD
3940 :0C51
3950 :0C2B
3960 :0C65
3970 :0C2C
3980 :0C21
3990 :0B6B
4000 :0BB6
4010 :0C66
4020 :0C1B
4030 :0C84
4040 :0C93
4050 :0C9B
4060 :0312
4070 :0955
4080 :08F7
```

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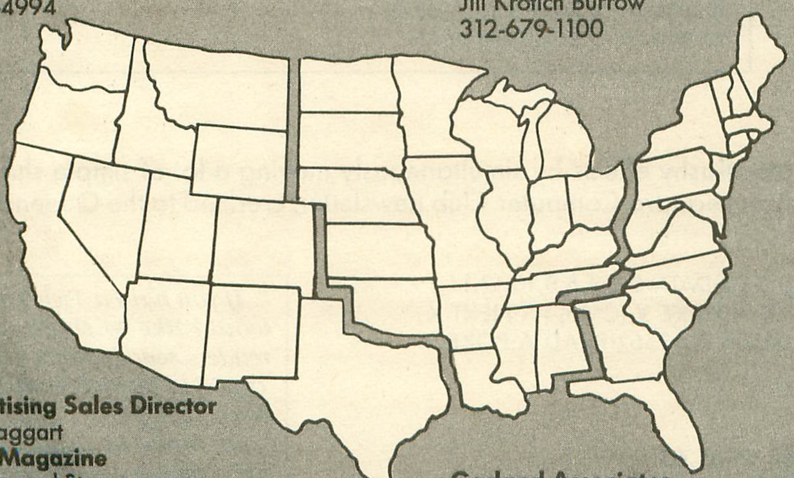
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MINI-GRAPHICS CHALLENGE

Atari graphics demonstrations have been a longtime favorite of Antic readers. Now here is a Tech Tips challenge: Write the best short *original* graphics demo for the Atari 8-bit or ST computers in standard Atari BASIC. Machine language loaders are okay. Keep your program as short as possible, with an absolute maximum of 10 lines.

Send your listing on disk before September 1, 1987 to: Tech Tips Challenge, *Antic* Magazine, 544 Second Street, San Francisco, CA 94107. The top demos will be featured on a future Tech Tips Page and the first-place winner will receive a software title from The Catalog. All entries become property of Antic Publishing and cannot be returned.

SMALL MIRACLE

When I see the latest issue of Current Notes, the magazine of the Washington Area Atari Computer Enthusiasts, the first thing I turn to is Mark Brown's Atari Small Miracles column. Following are two examples of his fine work.

VBI MUSIC

The following routine will install a VBI music player in Page Six. The music will continue to play while your program continues on undisturbed. Start the music with something like this:

```
JUNK=USR(1536,ADR(M1$),ADR(M2$),ADR(M3$),ADR(M4$))
```

The four strings are strings you have created earlier. Use only as many ADR( ) parameters in the call as you want voices. The strings should consist of character value pairs with the first being the note and the second being the length in 60ths of a second. For example, CHR$(121) and CHR$(15) would play a C note for 1/4 of a second. Terminate each string with two CHR$(0)'s.

```
10 C=0:FOR A=1536 TO 1685:READ B:C=C+A*B:POKE A,B:NEXT
  A:IF C<>25310305 THEN PRINT "DATA ERROR!":STOP
20 DATA 104,240,254,201,5,176,254,141,149,6,141,148,6
,  162,0,104,157,144,6,104,157,140,6,169,0,157,136,6,232
30 DATA 236,148,6,208,237,169,6,162,6,160,43,76,92,228
  ,173,149,6,240,85,169,3,141,15,210,169,0,141,8,210,141
40 DATA 149,6,170,189,136,6,208,52,168,189,144,6,133,1
  ,189,140,6,133,0,177,0,72,138,10,168,104,153,0,210,169
50 DATA 164,153,1,210,160,1,177,0,157,136,6,136,17,0,240,22
  ,189,140,6,24,105,2,157,140,6,144,3,254,144,6,169
60 DATA 127,238,149,6,222,136,6,232,236,148,6,208,185
  ,76,95,228,1,2,3,4,5,6,7,7,6,5,4,3,2,1
70 PRINT "ALL DATA CORRECT, VBI MUSIC INSTALLED!":END
```

Here is a short one-voice sample. Add these lines to the program and type GOTO 80 from the immediate mode after RUNning the program.

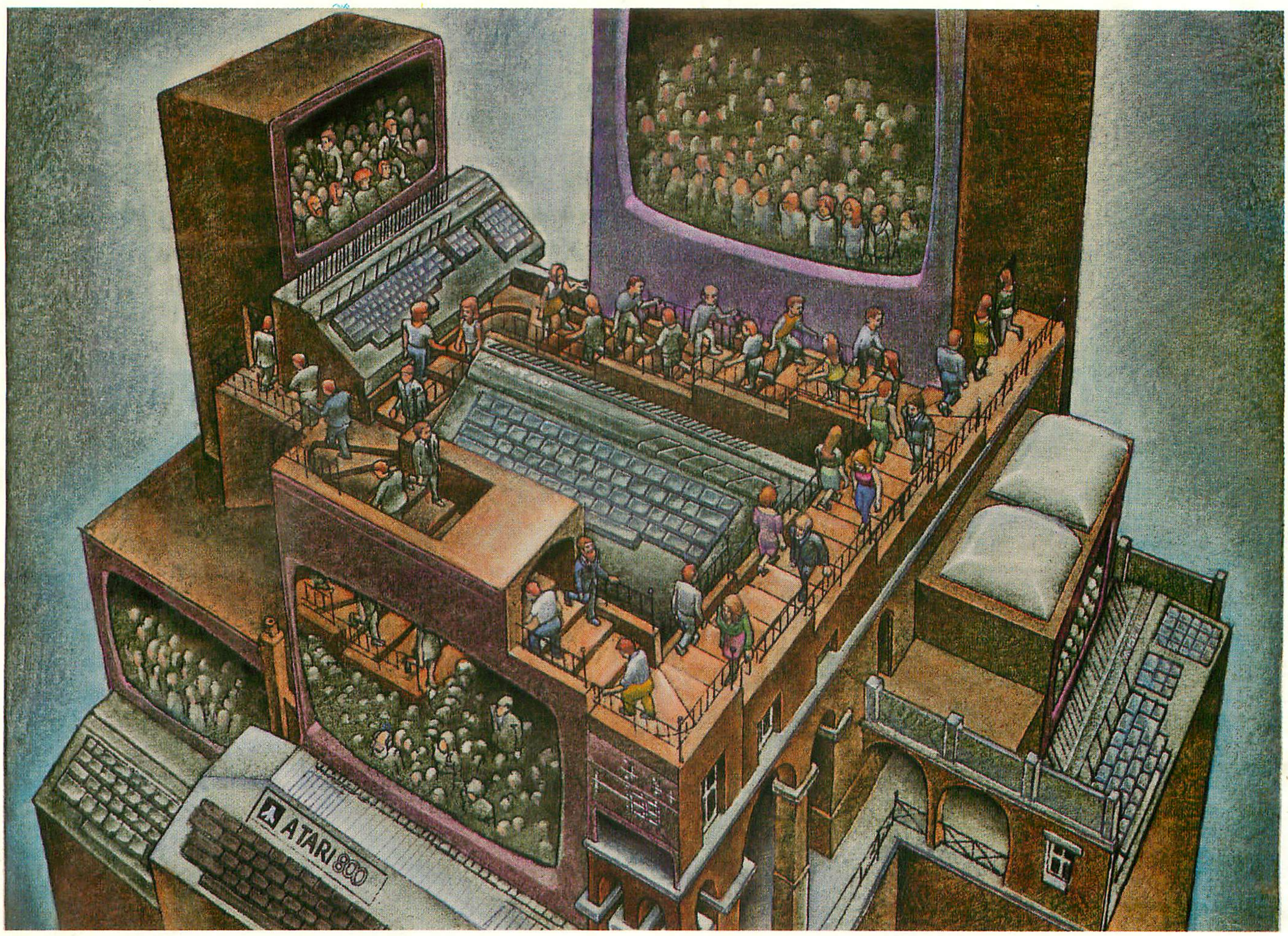
```
80 DIM M1$(18):FOR I=1 TO 18
90 READ D:M1$(I,I)=CHR$(D):NEXT I
100 X=USR(1536,ADR(M1$))
110 DATA 121,20,108,20,96,20,91,20,81
120 DATA 20,72,20,64,20,60,20,0,0
```

SQUARE SIZZLER

This impressive graphics demo creates flashy effects by simultaneously moving a lot of simple shapes in opposing directions. We saw it in the San Leandro Computer Club newsletter, credited to the Queensland (Australia) Atari Computer Enthusiasts.

```
20 TRAP 20:GRAPHICS 42:POKE 559,0:C=2:DATA 0,2,4,6,8,10,12,14
30 RESTORE 1:FOR X=705 TO 712:READ A:POKE X,(C*16)+A:NEXT X
35 POKE 559,34:IF R=0 THEN FOR X=1536 TO 1562:READ A:POKE
X,A:NEXT X:GOTO 80
40 GOTO 90:DATA 104,162,0,172
,193,2,189,194,2,157,193,2,232,224,8
50 DATA 144,245,140,200,2,96,65,65,65,65,65,65
80 FOR Z=1 TO 10:FOR X=1 TO 8:COLOR X:PLOT 0+L,0+L:DRAWTO
79-L,0+L:DRAWTO 79-L,191-L:DRAWTO 0+L,191-L
85 DRAWTO 0+L,0+L:L=L+1:NEXT X:NEXT Z
90 FOR E=1 TO 31:X=USR(1536):FOR T=1 TO 32:NEXT T:NEXT
 E:C=C+1:R=1:GOTO 30
```

If you have a Tech Tip that you would like to share with other readers, send it along to Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. You might get your name in print. We always welcome very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.



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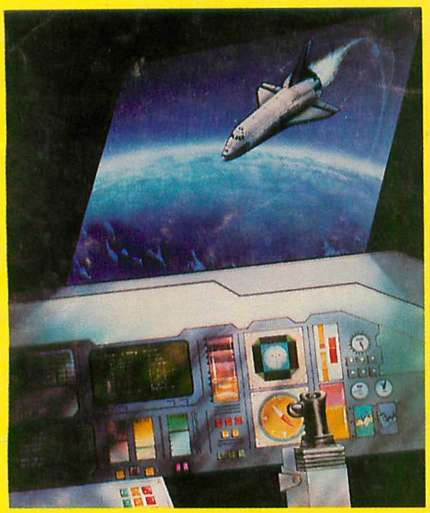
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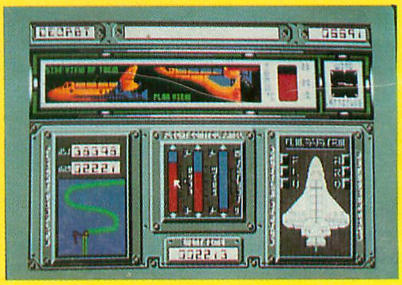
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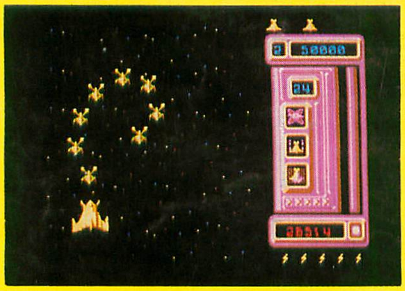


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